3.9 Aesthetics and Visual Resources

Visual resources are the natural and human-made features of a landscape that characterize its form, line, texture, and color. This section describes the existing landscape in the region and identifies potential impacts on visual resources for each HST Alignment Alternative related to the proposed addition of infrastructure in, or removal of infrastructure from, the existing landscape.[1] Infrastructure may include HST improvements/construction, tunnels, fences, noise walls, elevated viaducts and overpasses for railways, highways and pedestrians, catenaries,[2] and stations. This assessment evaluates the potential changes related to the introduction of the HST system to existing scenic landscapes, both during construction (addition of construction staging areas, site work, construction equipment, temporary barriers, fences, and temporary power poles) and operation.

3.9.1 Regulatory Requirements and Methods of Evaluation

A. REGULATORY

There are no specific regulatory requirements or federal or state standards for aesthetics and visual resources. However, both federal and state environmental guidelines require addressing topics related to the visual environment. The most explicit guidance is in the CEQA environmental checklist, which requires that a project proponent identify whether a project would have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including trees, rock outcroppings, and historical buildings within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area (State CEQA Guidelines Appendix G Environmental Checklist Form 2001). The FRA Procedures for Considering Environmental Impacts (FRA Docket No EP-1, Notice 5, May 26, 1999), under the topic of aesthetic environmental and scenic resources, states: "The EIS should identify any significant changes likely to occur in the natural landscape and in the developed environment." Consideration of local community design guidelines would be part of a subsequent phase of analysis for project-specific environmental review when more detailed engineering and architectural information would be developed for proposed alternatives. Caltrans design standards would apply to state highway improvements.

B. METHOD OF EVALUATION OF IMPACTS

The analysis of aesthetic and visual resources for this Program EIR/EIS focuses on a broad comparison of potential impacts on visual resources (particularly scenic resources, areas of historic interest, and natural open space areas and significant ecological areas [SEAs]) along proposed HST Alignment Alternatives and around HST station location options. The potential impacts of each of these alternatives are evaluated against the existing conditions, as described in Section 3.9.2, Affected Environment.

Photo simulations have been prepared to illustrate the conceptual design of the facilities associated with the HST Alignment Alternatives for a set of typologies (or general descriptions) selected from each of the regions and representative of highly scenic landscapes most subject to potential major visual impacts. These simulations have been used to evaluate how the distinguishable (dominant) visual features (color, line, texture, form) that characterize the existing landscape would change if the alternative alignment or station location option were implemented. Of particular interest are locations where plans and profiles show elevated structures (overpasses) and tunnel portals or extensive cut or fill. Also addressed in the evaluation is the potential shadow effect of elevated

[1] See Section 3.0, Introduction, for an explanation of how this section fits together with the HST Network Alternatives presented in Chapter 7, as well as for an overview of the information presented in the other chapters.

[2] *Catenaries* are the wires and support-pole system that deliver the power supply to the proposed HST system.

structures and the light and glare effects of the proposed alignment alternatives. For the HST Alignment Alternatives, the linear feature of the overhead electric wires and poles to supply power to the train, and the fenced track and potential noise barriers, are considered in the evaluation.

Potential changes to the dominant landscape features, or potential visual impacts, are described and ranked as high, medium, or low according to the potential extent of change to existing visual resources. Visual contrast rankings, or impact rankings, are defined as follows.

- *High visual impacts* would be sustained if features of the alignment or station were obvious and began to dominate the landscape and detract from the existing landscape characteristics or scenic qualities.
- *Medium visual impacts* would be sustained if features of the alignment or station were readily discernable but did not dominate the landscape or detract from existing dominant features.
- *Low visual impacts* would be sustained if features of the alignment or station were consistent with the existing line, form, texture, and color of other elements in the landscape and did not stand out.
- *Shadow impact ranking* would be high if the new (not existing) elevated structure were within 75 ft (23 m) of residential or open space, natural areas, or parkland.
- *Beneficial visual impact* would result if the alignment eliminated a dominant feature in the landscape that currently detracts from scenic qualities or blocks vistas.

C. CEQA SIGNIFICANCE CRITERIA

Under CEQA, a project would have a significant impact if it would (a) have a substantial adverse effect on a scenic vista, (b) substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway, (c) substantially degrade the existing visual character or quality of the site and its surroundings, or (d) create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Each corridor, alignment alternative, and station location option has been rated, as identified above, and a rating of high or medium can generally be considered as significant.

3.9.2 Affected Environment

A. STUDY AREA DEFINED

For the No Project Alternative, the affected environment is divided into typologies along both sides of existing highway and rail corridors. Several of the HST Alignment Alternatives being evaluated are either within or adjacent to these existing highway or rail corridors and therefore potentially would affect many of the same landscapes. The study area for aesthetics and visual resources is defined as 0.25 mi (0.40 km) from the centerline of proposed HST Alignment Alternatives and around station location options. However, where there are scenic viewing points or overlooks within 1 mi (2 km) of the HST Alignment Alternative, these scenic viewing points have been included in the study area. The distance range of up to 0.25 mi (0.40 km) from proposed alignment alternatives and station location options and up to 1 mi (2 km) from proposed alignment alternatives and facilities for scenic viewing points is considered the area where a change in landscape features would be most noticeable to viewers, and where newly introduced features could begin to dominate the visual character of the landscape.

B. GENERAL DISCUSSION OF AESTHETICS AND VISUAL RESOURCES

The region includes a number of distinct types of landscape typologies spread over a large geographic area, many of which are common among the regions. A typology of typical landscapes is

used to describe the aesthetic and visual resources in the study area. The typologies provide the baseline or existing conditions against which the analysis of potential change or visual impact for each of the proposed alternatives is evaluated. Photographs of highly scenic and typical landscapes in each of the five corridors are provided to illustrate the dominant line, form, color, and texture for that landscape typology.

The landscape typologies discussed are urban mixed use, urban suburban, traditional small urban community, industrial use, rural agriculture, and natural open space and parks.

Urban Mixed Use

The high-density urban mixed-use landscape typology consists of multifamily housing, high-rise office buildings, at-grade and elevated transportation systems (Caltrain, BART, VTA light rail, freight railways), street grids, and limited vegetation. This landscape typology characterizes the major metropolitan areas in the study area: San Francisco, Oakland, and San Jose. An example of the urban mixed use landscape typology is shown in Figure 3.9-1.

Urban Suburban

The urban suburban landscape typology consists of suburban areas of low-density development—modern single-family houses, yards set back, trees and ornamental landscaping—located around more densely developed metropolitan areas. This typology also includes commercial, retail, and office structures and infrastructure such as roads, highways, overpasses, underpasses, rail lines, and utilities. Examples include South San Jose, Mountain View, Fremont, Hayward, Livermore, Tracy, and Merced. An example of the urban suburban landscape typology is shown in Figure 3.9-2.

Traditional Small Urban Community

The traditional small urban community landscape typology is characterized by long-established rural communities—older buildings and historic architecture two to three stories high, with mature street trees—along existing highways or rail corridors. This typology comprises historic or early post-World War II residential neighborhoods characterized by small- to mid-size houses on small lots with narrow streets and retail, commercial, and institutional mixed uses along arterial streets. Examples include Morgan Hill, Gilroy, San Mateo, Pleasanton, and Palo Alto. An example of the traditional small urban community typology is shown in Figure 3.9-3.

Industrial Use

The industrial use landscape typology features industrial complexes with structures and warehouses of widely varied areas, sizes, and scales, and includes freight tracks and rail yards, transmission towers, substations, and utility lines. This typology typically is found along existing rail corridors or major highways. An example of the industrial landscape typology is shown in Figure 3.9-4.

Rural Agricultural

Broad, open agricultural fields with or without fences, along with barns, silos, and other farm structures, farm equipment, isolated farm houses, and low-density rural commercial strips typify the rural agricultural landscape typology. The horizontal topography is characterized by crop fields, farm roads, fence and pole lines, and wind breaks, punctuated by barns, houses, sheds, water towers, and other agriculture-related structures. This landscape typography is typical of the Central Valley region. An example of the rural agricultural landscape typology is shown in Figure 3.9-5.

Natural Open Space and Parks

Undeveloped natural areas such as coastal lagoons, forested mountains, mountain lakes and streams, rolling hills with woodlands and grasslands, and forested ridges and valleys with lush vegetation form the dominant visual features of these landscape typologies. These landscapes typologies are typically scenic with high aesthetic qualities. Examples include the Pacheco Pass, Altamont Pass, Central Merced County, and Niles Canyon. An example of the natural open space and parks typology is shown in Figure 3.9-6.

C. AESTHETICS AND VISUAL RESOURCES IN THE BAY AREA TO CENTRAL VALLEY REGION

San Francisco to San Jose

Starting from San Francisco, the landscapes along the Caltrain Corridor are typically urban mixed use or industrial, with stretches of urban suburban residential and commercial landscapes. The existing nonelectric rail tracks and stations along the Caltrain Corridor are one of a number of dominant linear features in the landscape between San Francisco and San Jose. Views of the Bay are part of the aesthetic landscape experience along some portions of the Caltrain Corridor near the cities of Brisbane and South San Francisco. Views of the hills along the peninsula are scattered along the line. Views of the skyline of San Francisco and the San Francisco Bay are visible from the Caltrain Corridor approaching the city. In many locations, the line runs behind businesses and buildings that visually shield the line from the surrounding community. Views of the Caltrain tracks are visible from several local parks and from San Bruno Mountain hiking trails; however, the tracks are not a dominant visual feature in these landscapes (the multiple-lane freeways and bridges are dominant).

Oakland to San Jose

Starting from Oakland, the landscapes along the corridor are typically urban mixed use or industrial, with stretches of urban suburban residential and commercial landscapes. The mostly elevated BART tracks are dominant linear features in the landscape between Oakland and Fremont, along with the two UPRR corridors. South of Fremont, the corridor is dominated by the I-880 freeway as it passes through commercial landscapes. As the corridor approaches San Jose, alternate routings continue along I-880 or Montague Expressway, Trimble Road, and the UPRR corridor to reach the San Jose Diridon station location option. Both HST Alignment Alternatives traverse commercial landscapes and a portion of parkland. The corridor ends at the Diridon station location option in San Jose. Views from the line include the East Bay hills and Mission Peak, south of San Jose. The South Bay wetlands would be visible from the elevated portions along I-880.

San Jose to Central Valley

This corridor traverses a variety of landscapes. Leaving San Jose, the landscape is a mix of urban suburban and industrial. The landscape transitions to rural agricultural and traditional small urban communities, with recurrence of urban suburban near Morgan Hill and Gilroy. As the line passes through San Benito County, the landscape is rural agricultural. Entering the valley leading to Pacheco Pass, paralleling SR 152, the landscape is open space. A series of tunnels brings the line to the edge of the Central Valley. Each alignment alternative in this corridor crosses the valley through a mix of rural agriculture and open space and parklands, and ends in the urban suburban landscape of Atwater and Merced.

Views from the line include the Santa Cruz Mountains, Mount Hamilton, San Eligo Lagoon, Elephant Head, Pacheco Peak, San Luis Reservoir, and the Grasslands Ecological Area. The line would be visible from locations in Henry Coe State Park, San Luis Reservoir State Recreation Area, San Joaquin National Cemetery, Volta State Wildlife Area, Los Banos State Wildlife Area, Great Valley Grasslands State Park, and the Fremont Ford State Recreation Area. In these areas, the HST alignment alternative would constitute a new form in the landscape, a medium to high visual impact.

Figure 3.9-1
Urban Mixed Use Typology

Figure 3.9-2
Urban Suburban Typology

Figure 3.9-3
Traditional Small Urban Typology

Figure 3.9-4
Industrial Typology

Figure 3.9-5
Rural Agricultural Typology

Figure 3.9-6
Natural Open Space and Parks Typology

East Bay to Central Valley

This corridor begins in the hills east of Fremont, where the HST Alignment Alternatives would all run in a tunnel through the Niles Canyon area. The alignment alternatives would emerge from the tunnel just west of Foothill Road and Arroyo de la Laguna and transition to an aerial structure. From here, there are several alignment alternatives.

The first would join the UPRR, on which the ACE trains operate. The alignment alternative would cross through the communities of Pleasanton and Livermore, a mixed landscape of traditional small urban community, urban suburban, and natural open space, with some industrial on the far east side of Livermore. Another alignment alternative would follow I-680 and I-580 through an urban suburban and open space landscape. These alignment alternatives meet at the western base of the Altamont Pass.

There are two alignment alternatives for the Livermore Valley. One goes through Altamont Pass and the other near Patterson Pass, which can be accessed only from the UPRR alignment. The two alignment alternatives meet west of I-580, west of Tracy. Across either pass, the landscape is open space, characterized by rolling hills dotted with wind turbines of all styles and sizes. As the hills descend into the Central Valley, the landscape is a mix of receding rural agriculture and industrial before it gives way to the urban suburban landscape of the city of Tracy.

There are four alignment alternatives in the Tracy area. The Tracy Downtown alignment alternatives would follow the historic Southern Pacific Railroad through the urban suburban and traditional small urban community that is found around downtown Tracy. East of downtown Tracy, the landscape changes back to rural agricultural, where the alignment alternatives join the Tracy ACE alignment alternatives. The Tracy ACE alignment alternatives would skirt the south and east sides of the city, running along the boundary of the urban suburban landscape of Tracy and the rural agricultural outskirts. The Tracy alignment alternatives meet near Oakwood Lake, on the west side of Manteca.

The Tracy alignment alternatives cross Manteca in the right-of-way of SR 120. If the UPRR alignment alternative were chosen between Stockton and Merced, the alignment alternatives would end at UPRR and SR 99. If the BNSF alignment alternative were chosen, the Tracy alignments would extend to Escalon, in the right-of-way of the proposed SR 120 freeway.

Views from the corridor include the open space over the Altamont Pass and the riparian areas along the San Joaquin River. The line would be visible from the Pleasanton Ridge Regional Park, Shadow Cliffs Regional Park in Pleasanton, and along Bernal Creek. The HST alignment alternatives, when viewed from Pleasanton Ridge and Shadow Cliffs, would be a minimal visual impact, because the existing railways and highways would continue to be the dominant features. When viewed from Bernal Creek, the HST system would dominate because it would be on a structure close to the creek.

San Francisco Bay Crossings

The landscape of the Transbay alignment alternatives varies. The majority is open space, in the form of San Francisco Bay and the abandoned runways and tarmac of the former Alameda Naval Air Station. The Port of Oakland, BNSF and UPRR rail yards, and surrounding support facilities are industrial. The developed areas of Oakland and San Francisco are urban mixed use, with higher concentrations of uses in San Francisco.

The Dumbarton alignment alternatives begin in the urban suburban landscape of Redwood City and pass through an industrial landscape before entering the park and open space of the Don Edwards San Francisco Bay National Wildlife Area and San Francisco Bay. On the east side of the bay, the alignment alternatives cross the industrial and urban suburban landscape of Newark and mainly

residential urban suburban landscape of Fremont before meeting in the open space of the hills east of Fremont.

Central Valley Alignment

The Central Valley corridor traverses landscapes that alternate between urban suburban and industrial near the cities and a mix of rural agricultural and traditional small urban communities in the smaller towns. Brief landscapes dominated by grain silos or other rail-industrial installations occur at times in the rural agricultural landscape. See Figure 3.9-7—Rail-Industrial Rural Landscape for an example of typical structures serving agriculture.

Views from the rail lines in this corridor are limited because of the flat terrain. Short vistas of riparian area occur when passing rivers. The HST line would be visible from some locations in the downtown districts of the cities through which it passes.

3.9.3 Environmental Consequences

A. NO PROJECT ALTERNATIVE

The existing conditions in 2007, or existing landscapes, are used as the baseline and are assumed to be representative for the analysis of potential visual impacts of the HST Alignment Alternatives and stations. The highway projects approved and funded for construction by 2030 and included in the No Project Alternative are described in Chapter 2, "Alternatives." These improvements or changes to the existing highways and airports are generally expansions or reconfigurations of existing facilities that would not result in substantial visual contrasts or changes to the dominant line, form, color, or texture characterizing the existing landscape condition. No significant visual impacts, shadow, or glare impacts have been identified for the changes between the existing conditions and No Project Alternative for this program-level analysis. As these projects advance, the project sponsors (not the Authority) may identify and address some localized visual impacts in separate environmental documentation.

B. HIGH-SPEED TRAIN ALIGNMENT ALTERNATIVES

The study area is divided into six corridors: San Francisco to San Jose, Oakland to San Jose, San Jose to Central Valley, East Bay to Central Valley, San Francisco Bay Crossings and Central Valley. Alignment alternatives and station location options within each corridor are discussed in the overall corridor description. Table 3.9-1 summarizes the visual impacts by alignment alternative and station location option (Appendix 3.9-A provides more detail). This section focuses on the anticipated long-term impacts of the HST Alignment Alternatives and station location options. A general review of the short-term impacts that would occur during project construction is provided at the end of this section.

Figure 3.9-7
Rail-Industrial Rural Landscape

Table 3.9.1. Visual Impacts Summary Data Table for Alignment Alternatives and Station Location Option Comparisons

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
San Francisco to San Jose: Caltrain	1 of 1	San Francisco to Dumbarton	Two additional tracks	Low	Low visual impact
			Pedestrian overcrossings at stations	High visual impact	
			Pedestrian undercrossings at stations	Low	
			Raised Caltrain right-of-way	Low	
	1 of 1	Dumbarton to San Jose	Two additional tracks	Low	Low
			Pedestrian overcrossings at stations	High	
			Pedestrian undercrossings at stations	Low	
			Raised Caltrain right-of-way	Low	
			New two-track bridge next to historic San Francisquito Creek truss bridge	Low	
			Two additional tracks at El Palo Alto Redwood	Low	
			Elevated facilities at Diridon San Jose station	Medium	
Station Location Options					
Transbay Transit Center			Underground facilities at station	No	
4th and King (Caltrain)			Underground facilities at station	No	
Millbrae/SFO			Additional two tracks west of existing tracks	No	
Redwood City (Caltrain)			Elevated four-track station	Low	
Palo Alto (Caltrain)			Additional track between existing tracks, one to the east of existing tracks, pedestrian underpasses	Low	
Oakland to San Jose: Niles/I-880	1 of 2	West Oakland to Niles Junction	Highway grade separations	Low	Low
			Elevated alignment	Medium and shadowing impacts	
		12th Street/City Center to Niles Junction	Highway grade separations	Low	Low
			Elevated alignment	Medium and shadowing impacts	
	1 of 2	Niles Junction to San Jose via	Elevated alignment adjacent to residential	Medium and shadowing impacts	Medium

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
		Trimble	Elevated alignment along I-880 freeway	Low	
			Elevated alignment along Montague and Trimble Road	Low	
			Elevated alignment near historic Santa Clara Depot and Tower	Medium	
			Elevated facilities at Diridon San Jose station	Medium	
		Niles Junction to San Jose via I-880	Elevated alignment adjacent to residential	Medium and shadowing impacts	Medium
			Elevated alignment along I-880 freeway	Low	
			Elevated facilities at Diridon San Jose station	Medium	
Station Location Options					
West Oakland/7th Street			Underground station	Low	
12th Street/City Center			Underground station	Low	
Coliseum/Airport			At-grade station	Low	
Union City (BART)			At-grade station	Low	
Fremont (Warm Springs)			Elevated station	Low	
San Jose to Central Valley: Pacheco Pass	1 of 1	Pacheco	Elevated facilities at Diridon San Jose station	Medium	Medium
			Elevated facilities south of Diridon station	Low and shadowing impacts	
			Highway grade separations	Low	
			Expansion of existing railway corridor along Monterey Highway	Medium	
			New transportation corridor between Gilroy and Pacheco Valley	Medium	
			Elevated crossing of SR 152 in Pacheco Valley	High	
			Cut and fill sections over Pacheco Pass	Medium	
	1 of 3	Henry Miller (UPRR Connection)	Trench alignment near San Joaquin National Cemetery	Medium	Low
			Elevated crossing of I-5	Low	
			Wetlands crossing	Medium	
			UPRR Connection	Low	

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
		Henry Miller (BNSF Connection)	Trench alignment near San Joaquin National Cemetery	Medium	Low
			Elevated crossing of I-5	Low	
			Wetlands crossing	Medium	
			BNSF connection	Low	
		GEA North (UPRR Connection)	New transportation corridor between Pacheco Pass and Gustine	Medium	Medium
			Elevated crossing of I-5	High	
			Wetlands crossings	Medium	
			New transportation corridor connections to UPRR in Atwater	Medium	
		GEA North (BNSF Connection)	New transportation corridor between Pacheco Pass and Gustine	Medium	Medium
			Elevated crossing of I-5	High	
			Wetlands crossings	Medium	
			New transportation corridor connections to BNSF in Atwater	Medium	
Station Location Options					
San Jose (Diridon)			Elevated concourse and platforms at San Jose Diridon station	Medium	
Morgan Hill (Caltrain)			Elevated station	Medium	
Gilroy (Caltrain)			Elevated station	Medium	
East Bay to Central Valley: Altamont Pass	1 of 4	I-680/ 580/UPRR	Trench alignment from tunnel portal to I-680	Low	Medium
			Elevated alignment along I-680	Medium and shadowing impacts	
			Elevated alignment through I-680, I-580 interchange	Medium	
			Elevated approaches to station	High	
			Elevated crossing of I-580	Medium	
		I-580/UPRR	Trench alignment from tunnel portal to east of I-680	Low	Medium
			Elevated alignment along existing UPRR in Pleasanton	Medium and shadowing impacts	
			At-grade alignment along existing UPRR through Livermore	Low	

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
			Deep cut at Altamont Summit	Medium	
		Patterson Pass/UPRR	Aerial alignment from tunnel portal to east of I-680	High	Low
			Elevated alignment along existing UPRR in Pleasanton	Medium and shadowing impacts	
			At-grade alignment along existing UPRR through Livermore	Low	
			Cut and fill across summit	Low	
		UPRR	Trench alignment from tunnel portal to east of I-680	Low	Medium
			Elevated alignment along existing UPRR in Pleasanton	Medium and shadowing impacts	
			At-grade alignment along existing UPRR through Livermore	Low	
			Deep cut and fill across summit	Medium	
	1 of 4	Tracy Downtown (BNSF Connection)	New at-grade corridor from summit to I-580	Low	Low
			Elevated crossing of I-580	Medium	
			At-grade alignment through Tracy	Low	
			At-grade alignment in median of SR 120	Low	
			New at-grade corridor from SR 99 to BNSF	Low	
		Tracy ACE Station (BNSF Connection)	New at-grade corridor from summit to I-580	Low	Low
			Elevated crossing of I-580	Medium	
			At-grade alignment along UPRR	Low	
			At-grade alignment in median of SR 120	Low	
			New at-grade corridor from SR 99 to BNSF	Low	
		Tracy ACE Station (UPRR Connection)	New at-grade corridor from summit to I-580	Low	Low
			Elevated crossing of I-580	Medium	
			At-grade alignment along UPRR	Low	
			At-grade alignment in median of SR 120	Low	

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
		Tracy Downtown (UPRR Connection)	New at-grade corridor from summit to I-580	Low	Low
			Elevated crossing of I-580	Medium	
			At-grade alignment through Tracy	Low	
			At-grade alignment in median of SR 120	Low	
	2 of 2	East Bay Connections	Aerial across Niles Canyon Road and Alameda Creek	Medium	Medium
Station Location Options					
Pleasanton (I-680/Bernal Rd)			Elevated station	Medium	
Pleasanton (BART)			Elevated station	High	
Livermore (Downtown)			At-grade station	Low	
Livermore (I-580)			Elevated station	High	
Livermore (Greenville Road/UPRR)			At-grade station	Low	
Livermore (Greenville Road/I-580)			Elevated station	Medium	
Tracy (Downtown)			Elevated station	Medium	
Tracy (ACE)			Elevated station	Medium	
San Francisco Bay Crossings	1 of 2	Trans Bay Crossing—Transbay Transit Center	Underground alignment	No	No
		Trans Bay Crossing—4th & King	Underground alignment	No	No
	1 of 6	Dumbarton (High Bridge)	High-level bridge	Medium Medium impacts on Centerville alignment across Fremont	Medium
		Dumbarton (Low Bridge)	Low-level bridge	Low Medium impacts on Don Edwards Preserve and Centerville alignment across Fremont	Medium

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
		Dumbarton (Tube)	Underground alignment	No Medium impacts on Don Edwards Preserve and Centerville alignment across Fremont	Medium
		Fremont Central Park (High Bridge)	High-level bridge	Medium Medium impacts on Don Edwards Preserve and through Newark	Medium
		Fremont Central Park (Low Bridge)	Low-level bridge	Low Medium impacts on Don Edwards Preserve and through Newark	Low
		Fremont Central Park (Tube)	Underground alignment	No Medium impacts on Don Edwards Preserve and through Newark	Low
Station Location Option					
Union City (Shinn)			Elevated station	High	
Central Valley	1 of 6	BNSF—UPRR	Elevated crossing of SR 4 viaduct in downtown Stockton	Medium	Low
			Elevated crossing of SR 99 near French Camp	Medium	
			Elevated structure through Escalon	Low	
			Elevated structure through Riverbank	Low	
			Curve realignment at Tuolumne River	High	
			Curve realignment at Chowchilla River	Low	
		BNSF	New alignment south of Lodi	Low	Low
			Elevated structure through Escalon	Low	
			Elevated structure through Riverbank	Low	
			Curve realignment at Tuolumne River	High	

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
			Curve realignment south of Merced	Low	
			Curve realignment at Chowchilla River	Low	
		UPRR N/S	Elevated crossing of SR 4 viaduct in downtown Stockton	Medium	Low
			Elevated crossing of SR 99 near French Camp	Medium	
			Elevated structure through downtown Manteca	Low	
			Curve realignment in Modesto	Low	
			Elevated structure through downtown Turlock	Low	
			Elevated structure through downtown Chowchilla	Low	
		BNSF Castle	New alignment south of Lodi	Low	Low
			Elevated structure through Escalon	Low	
			Elevated structure through Riverbank	Low	
			Curve realignment at Tuolumne River	High	
			New alignment into Castle AFB	Medium	
			Curve realignment south of Merced	Low	
			Curve realignment at Chowchilla River	Low	
		UPRR—BNSF Castle	Elevated crossing of SR 4 viaduct in downtown Stockton	Medium	Low
			Elevated crossing of SR 99 near French Camp	Medium	
			Elevated structure through Escalon	Low	
			Elevated structure through Riverbank	Low	
			Curve realignment at Tuolumne River	High	
			New alignment into Castle AFB	Medium	
			Curve realignment at Chowchilla River	Low	
		UPRR—BNSF	Elevated crossing of SR 4 viaduct in downtown Stockton	Medium	Low

Corridor	Possible Alignment	Alignment	Change	Visual Impact Ranking	Alignment Visual Impact Ranking
			Elevated Crossing of SR 99 near French Camp	Medium	
			Elevated structure through downtown Manteca	Low	
			Curve realignment in Modesto	Low	
			Elevated structure through downtown Turlock	Low	
			Curve realignment at Chowchilla River	Low	
Station Location Options					
Modesto (Downtown)			At grade station	No	
Briggsmore (Amtrak)			At grade station	No	
Merced (Downtown)			At grade station	Low	
Castle AFB			At grade station	No	

A discussion of these impacts organized by corridor follows.

San Francisco to San Jose Corridor

This corridor runs from the Transbay Transit Center in San Francisco to Diridon station location option in San Jose. It contains two alignment alternatives: San Francisco to Dumbarton and Dumbarton to San Jose.

Visual Impacts

To accommodate HSTs, the Caltrain line would be expanded from two to four tracks. Currently, there are two sections of four-track mainline, as noted above, through portions of Brisbane and South San Francisco, and in Sunnyvale. In most locations, the addition of two tracks would be within the existing right-of-way and would have a low visual impact. In some cases, it would be necessary to remove mature trees along the line. New plantings can replace the removed trees to minimize the visual impact. Where the additional tracks necessitate widening overcrossings or placing the railway on retained fill, the new structures can be designed to complement the historic character of nearby structures, as has been done at the San Carlos station.

The addition of the HST alignment alternative to the Caltrain Corridor also would require the full grade-separation of the railway. This means that all street and pedestrian crossings would go over or under the tracks. Some smaller crossings may be closed. In the locations where the railway is to be raised to pass over streets, there would be a visual impact from the raised embankment. A simulation of a raised section of railway is shown in Figure 3.9-8—Grade Separation at Burlingame Station.

Additional passenger boarding platforms would be built for the HST at certain stations, and underpasses or overpasses would be necessary to eliminate passengers crossing the railway tracks at grade at all stations. These projects would alter the existing visual qualities of the Caltrain stations.

Figure 3.9-8a
Grade Separation at Burlingame Station

Figure 3.9-8b
Grade Separation at Burlingame Station
Project Simulation

In some cases, such as the San Carlos station, projects previously have been undertaken to improve the station platforms through grade separations. The San Carlos station project was designed to complement the historic details and materials of the existing station building. New grade-separated, four-track stations were completed recently on the Caltrain line at Bayshore and Lawrence. The Bayshore station uses a pedestrian overcrossing for the grade separation. Lawrence uses a pedestrian undercrossing. The visual impact of the overcrossing is high because it consists of two towers with an elevator and stairs connected by a bridge over the tracks. The undercrossing's visual impact is low. These stations are representative of improvements that would be expected to be made to other stations along the line where the HST is not expected to stop.

Historic Buildings, Neighborhoods, Landscapes

Several stations on the Caltrain line are historic—the Millbrae (1907), Burlingame (1894), San Carlos (1888), Menlo Park (1867), Palo Alto (1941), Santa Clara station (1864) and tower (1920s), and San Jose Diridon (1935). The HST station location option in San Jose is addressed below in the San Jose to Central Valley corridor. The proposed HST alignment alternative would include stops at Millbrae, Redwood City *or* Palo Alto, San Jose, and the Transbay Transit Center and/or 4th and King in San Francisco. Many of the communities along the Caltrain corridor developed with construction of the railway. The result is that many of the main streets in these communities are oriented toward the Caltrain line. Introduction of two more tracks for HST, catenary, grade separations, and protective fencing and barriers would be visible to people on the downtown streets, but in most cases, the station buildings dominate the vista from downtowns toward the railway, blocking the visual impact of these changes on downtown vistas. In all cases except San Jose, the station building is on the west side of the railway. In all cases except San Jose, Palo Alto, and Redwood City, the downtown district is also to the west of the railway. This gives the station building the ability to mask the view of the railway tracks from most of the peninsula cities' commercial districts, minimizing the visual impact of the HST.

Millbrae is the terminus of BART in the West Bay and a stop served by almost all Caltrain services. It is the station where travelers transfer from Caltrain to BART to make the connection to the San Francisco International Airport. The introduction of HST to the Caltrain line would only reinforce the importance of the Millbrae station as a major regional station. The historic Millbrae station building is south of the existing BART/Caltrain station and currently home to the Millbrae Historical Society.

The introduction of HST to the Caltrain system would require that the current two-track Caltrain configuration at the Millbrae station be expanded to four tracks. (A third track and platform are south of the existing station but do not carry through the station.) The additional tracks would be added to the west of the existing tracks, and a new outside boarding platform would be constructed; the existing shared BART-Caltrain platform would be lengthened to 1,400 ft (400 m). The addition of the two tracks would require relocation of the historic station. It is assumed that the relocation would keep the building close to the station complex. The station was relocated to its current location in 1980 as part of a road-widening project. The relocation of the building again should not cause a visual impact because the landscape is dominated by the Millbrae Avenue overcrossing and the existing Caltrain/BART station.

Redwood City is a station location option. If the HST service continues south to San Jose, a choice would need to be made between Redwood City and Palo Alto for the HST station location. Regardless of the station location option decision, the line would be elevated through Redwood City and would be a major stop for Caltrain. Redwood City's Downtown Precise Plan includes a rendering of a fully elevated station on its cover, indicating that the city is planning for the eventual elevation and expansion of the existing tracks. If the tracks are elevated in concert with the planned redevelopment of the area surrounding the station, the visual impact should be low because proposed buildings around the station would be much taller than the buildings there currently. See Figure 3.9-9—Future Caltrain Station, Redwood City Downtown Precise Plan.

The Caltrain truss bridge over San Francisquito Creek, built in 1902, is the only through truss bridge on the line. The design of the bridge to carry the two new tracks over the creek should have a low visual impact because the dominant view to the bridge is from the adjacent roadways and bike/pedestrian bridge, and a new bridge could be designed to allow the existing truss bridge to remain the dominant form along the rail line.

To the east of the Caltrain tracks, between Menlo Park and Palo Alto on the south bank of San Francisquito Creek, is a coast redwood called *El Palo Alto*. It is California Historical Landmark No. 2, recognized by the National Arborist Association and International Society of Arboriculture for its historical significance. It was a campsite for the Portola Expedition Party (1769), a gathering place for the Costanoan/Ohlone Indians, and used as a sighting tree by surveyors plotting out El Camino Real. It appears on the city of Palo Alto's official seal and on the seal of Stanford University. The addition of two tracks to the west of the existing Caltrain tracks and the installation of poles and catenary for electrification should have a low visual impact on El Palo Alto because the 110-foot tree dominates the landscape.

If HST service extends the length of the Caltrain line, Palo Alto would be a station location option. If this were the case, the existing configuration of two tracks with outside platforms would be replaced by a configuration of four tracks with twin island platforms, extending from the station building toward Alma Avenue on the east side. Underpasses to each side of the tracks would connect the platforms. Designing the platform canopies in an art-deco style complementary to the station building would help ensure that this expansion would have a low visual impact on the historic station building.

Affected Views from State Scenic Highways

Designated and eligible state scenic highways in the corridor include I-280 from its terminus near the 4th and King Street station location option in San Francisco to I-880 in San Jose. The alignment is within 1 mi (2 km) of I-280 in the City of San Francisco and would be visible from the highway between the Cesar Chavez Street and US 101. The railway and highway pass through an industrial landscape in this area. The addition of two tracks to the existing Caltrain railway would have no impact on the visual quality experienced from I-280.

Oakland to San Jose Corridor

This corridor runs from Oakland to Diridon station in San Jose. It contains four alignment alternatives, reflecting two alternate terminal sites in Oakland and two alternate routings between Milpitas and San Jose. The alignments are West Oakland to Niles Junction, 12th Street/City Center to Niles Junction, Niles Junction to San Jose via Trimble Road, and Niles Junction to San Jose via I-880.

Visual Impacts

In this corridor, the HST alignment alternatives would require a pair of dedicated tracks. Starting from the north, the alignment alternatives begin at grade along the I-880 freeway in west Oakland. The West Oakland alignment alternative descends into a tunnel near Seventh Street to travel toward an underground station adjacent to the West Oakland BART station. From there, it continues in tunnel past downtown Oakland, emerging along the UPRR corridor near 14th Avenue. The 12th Street/City Center alignment alternative begins in the same location along I-880 in west Oakland, but runs north, descending into a tunnel crossing under west Oakland to downtown Oakland, where an underground station would be constructed beneath and perpendicular to the 12th Street BART station. The alignment would then continue in a tunnel to emerge along the UPRR corridor near 14th Avenue. The elevated I-880 freeway dominates the landscape where the alignment alternative would be above grade. Elsewhere, the alignment alternative would be underground. Each station location option would require the construction of a station entrance above the underground station, but in either case, the visual impact of the building would be low. A west Oakland station location would be built adjacent to the elevated West Oakland BART station, where the elevated BART station would

Figure 3.9-9
Future Caltrain Station, Redwood City Downtown Precise Plan

continue to be the dominant visual feature in the landscape. For the 12th Street alignment alternative, the station building would be set in the middle of Oakland's downtown commercial district, characterized by visually dominant high-rise buildings.

Between 14th Avenue in Oakland and Niles Junction, the two HST alignment alternatives would follow the same alignment, sharing right-of-way with the UPRR as it passes through industrial and urban suburban residential landscapes. The alignment alternatives would run outside the historic centers of cities along the corridor. Most of the communities along this corridor developed after the railway was built. In many residential areas, soundwalls already exist along the edges of the railroad right-of-way. The two additional tracks for an HST, with its associated infrastructure, would be hidden from many existing residential areas behind existing soundwalls, creating no new visual impact. In areas where new soundwalls are deemed appropriate, the new walls would continue a visual theme already present in the corridor.

The addition of HST to this corridor would require the full grade-separation from streets and rail spurs off the UPRR. This means that all streets, pedestrian crossings, and rail spur tracks would go over or under the HST tracks. Some smaller road crossings may be closed and some spur tracks abandoned. In the locations where roadways are lowered to cross under the railway, there would be a low visual impact. A simulation of a roadway undercrossing of railway is shown in Figure 3.9-10—Undercrossing at Fruitvale Avenue.

Two intermediate stations are planned in the corridor. The Coliseum station location option would be built between the existing BART station and Oakland Coliseum Complex, vastly expanding the existing Coliseum station of the Capitol Corridor trains. Pedestrian access to the HST and Capitol Corridor platforms would be from an elevated concourse. The existing footbridge between the BART station and the Coliseum station would be expanded to serve as the concourse. This station location option would have a low visual impact because the Oakland Coliseum and Arena facilities would continue to dominate the landscape visually.

A station location option is also planned adjacent to BART's Union City station and the proposed Capitol Corridor station. The HST station would be located along the existing Capitol Corridor tracks, a few hundred feet east of the BART station. The HST station would be at grade, with two outside platforms and four tracks. The outer tracks would serve trains stopping at the station; the inner tracks would be used by express trains. The new station would have a low visual impact on the surrounding landscape.

South of the station, a pair of tracks may diverge from the line, turn to the east, and enter a tunnel into Niles Canyon to connect to the Altamont alignment alternative in the East Bay to Central Valley corridor. Past this junction, the line would pass the historic town of Niles and transition to an elevated structure through the Niles Junction area. The elevated structure would have a low visual impact on the surrounding residential area and medium shadowing impacts before returning to an at-grade alignment.

South of Lake Elizabeth and Paseo Padre Parkway in Fremont, the HST would transition to an elevated alignment above the UPRR and planned BART line. The elevated structure would be between 26 ft (7.9 m) and 50 ft (15.2 m) high. This would introduce a new elevated lineal element into the immediate landscape. The structure would have a medium visual impact on residential areas along the west side of the corridor, including shadow impacts, especially where the structure ascends to its maximum height to cross above highway overcrossings of the existing railway and planned BART line at Washington Boulevard and Auto Mall Parkway.

Another potential HST station location option would be located adjacent to BART's proposed Warm Springs station in Fremont. The station would consist of four tracks with two outside platforms. The

tracks and platforms would be elevated about 26 ft (7.9 m) above grade, with the platform shelter canopies extending to about 40 ft (12.1 m). The station would be more than 1,400 ft (400 m) long, with additional length at either end for the track fans (switches and trackwork) to allow the two-track mainline to split to four tracks. While this would be a large structure, it would not dominate the surrounding industrial landscape. The alignment would leave the UPRR/BART right-of-way near Mission Boulevard and enter the I-880 right-of-way, where it would remain on an elevated structure, in the median of the freeway. The elevated structure would be between 26 ft (7.9 m) and 50 ft (15.2 m), reaching the maximum when passing over highway overpasses. The aerial structure would be a dominant, compatible, linear feature along the freeway. The landscape along the freeway is predominantly industrial and commercial, with some residential on the east side in the city of Milpitas. While the aerial structure would be visible, the freeway would continue to dominate the landscape, resulting in a low visual impact.

Where Montague Expressway intersects I-880, two alignment alternatives exist for the reminder of the corridor into Diridon station in San Jose. The Niles Junction to San Jose via I-880 alignment alternative continues elevated in the median of I-880 until near SR 87. Upon leaving the freeway right-of-way, the HST railway would descend into a tunnel beneath Columbus Park and then climb to enter Diridon station. The visual impact along the freeway would be similar to what was described above.

The Niles Junction to San Jose via Trimble alignment alternative leaves the I-880 right-of-way and follows Montague Expressway and Trimble Road to the UPRR Coast Line and Caltrain line at the Santa Clara station. The landscape along this alignment alternative is industrial and commercial. The HST railway would be elevated above the median of Montague Expressway and Trimble Road and then descend to a tunnel from approximately Zanker Road to the Central Expressway. The line would ascend to an aerial structure in the UPRR right-of-way. The alignment alternative would remain on an aerial structure along the Caltrain line and into the Diridon San Jose station.

The aerial alignment would introduce a new lineal form to the landscape, but it would complement the lineal form of the highways and associated landscaping, resulting in a low visual impact. The aerial alignment along the UPRR and Caltrain railways passes through an industrial landscape. The elevated HST would have a low visual impact, except where it passes the Santa Clara station (1864). This impact is discussed below.

Historic Buildings, Neighborhoods, Landscapes

The Santa Clara Caltrain station and tower were built in 1864 and the 1920s, respectively. The elevated structure would introduce a new dominant linear form behind the historic depot. The proposed HST line, should the Trimble alignment alternative be selected, would be between 26 ft (7.9 m) and 50 ft (15.2 m). While not dominating the landscape, the aerial structure would have a medium visual impact on the historic depot and tower and would also create shadow impacts.

The HST station location option in San Jose is addressed below in the San Jose to Central Valley corridor.

Affected Views from State Scenic Highways

Designated and eligible state scenic highways in the corridor include I-680 in Alameda County. The proposed HST alignment alternative is within 1 mi (2 km) of I-680 near Mission Boulevard in south Fremont and would be visible from the highway in that location. The railway would pass through an industrial landscape in this area. The addition of two tracks above the existing railway would have a low impact on the visual quality experienced from I-680 because the HST structure would complement the lineal form of the existing railway.

Figure 3.9-10a
Undercrossing at Fruitvale Avenue

Figure 3.9-10b
Undercrossing at Fruitvale Avenue
Project Simulation

San Jose to Central Valley Corridor

This corridor extends from the Diridon station in San Jose to the Central Valley. From San Jose to Gilroy, the alignment follows the UPRR corridor. From Gilroy across the Pacheco Pass, it is generally in the vicinity of SR 152. Three alignment alternatives exist from the east side of Pacheco Pass: GEA North, Henry Miller BNSF Connection, and Henry Miller UPRR Connection. The GEA North runs north past the town of Gustine and then east across the valley to just west of the city of Atwater where it connects with the BNSF alignment alternative. The Henry Miller (UPRR Connection) and the Henry Miller (BNSF Connection) alignment alternatives share the same alignment for most of their length, running past the community of Santa Nella and parallel to Henry Miller Avenue to just west of the city of Chowchilla. The Henry Miller (UPRR Connection) splits west of Chowchilla to connect to the Central Valley UPRR N/S alignment alternative. The Henry Miller (BNSF Connection) passes south of the city of Chowchilla and splits to connect to the Central Valley HST BNSF alignment alternative.

Visual Impacts

Implementation of HST in this corridor would require a dedicated pair of tracks. The corridor begins at Diridon station in San Jose. The HST would be accommodated by building a concourse and up to six HST tracks and three platforms above the existing platforms. The proposed platforms for HST would be located at 45 ft (13.7 m) above grade. The platforms would extend more than 1,400 ft (400 m), with additional length at either end for the track fans (switches and trackwork to allow the two-track mainline to serve all six station tracks). A canopy covering the HST platforms would extend the building height to 70 ft (21 m). The City of San Jose is planning for an intensification of land uses in and around the Diridon station, so the expanded HST station would constitute a medium visual impact, given that it would be a much longer and taller structure than the existing station building but in a setting that is proposed to have many larger buildings developed in the area.

The line would run on an elevated structure up to 45 ft (13.7 m) tall until it crosses I-280, where it would descend to a retained fill section alongside the existing UPRR and Caltrain's Gilroy service. It would pass through a traditional small urban neighborhood before passing over SR 87 and ascending to an aerial alignment past the Tamien station. The retained fill and aerial sections would be a low visual impact on the surrounding landscape, creating shadow impacts on residential areas immediately adjacent to the right-of-way.

Just north of Almaden Expressway, the line returns to an at-grade alignment alongside the UPRR as it passes through the urban suburban landscape of South San Jose. A view of the current Caltrain/UPRR railway as it runs alongside Monterey Highway is provided in Figure 3.9-11—Caltrain/UPRR along Monterey Highway. The proposed configuration would continue all the way through Morgan Hill and Gilroy. New roadway grade separations would carry roadways either over or under the UPRR and HST tracks. Because the HST would be placed in an existing rail right-of-way, the visual impact would be low.

The traditional small urban community landscapes south of the highly urbanized San Jose area and through the small rural towns of Morgan Hill and Gilroy are characterized by mixed residential, commercial, and institutional uses in early to mid–20th century contiguous buildings, with average heights of 2 to 3 stories, minimal setbacks from streets, mature landscaping, and pedestrian-oriented streetscapes. Dominant visual features are historic architecture, mature street trees, and the surrounding distant mountainous ridgelines.

A station location option for the HST could be provided in either Morgan Hill or Gilroy. In either location, the station would consist of four tracks, two for non-stopping trains and two to serve outside platforms for stopping trains. At either location, Morgan Hill or the historic Gilroy station, the HST facilities would be elevated, and the visual impact would be medium.

South of Gilroy, the HST parallels the UPRR until Carnadero Junction, where it leaves the rail right-of-way to cross the valley towards San Felipe. The landscape is rural agricultural as the line crosses the Pajaro River and Tequisquita Slough and passes near San Eligo Lagoon. In this landscape, the line has a medium visual impact, introducing a new transportation corridor to a rural agricultural area.

The coastal valley landscape consists of flat or rolling landscapes ringed with low hills and mountains in the background. Dominant visual elements are vistas of agricultural bottomland and wetlands framed by background views of green hills, ridges, and mountains.

At San Felipe, the line crosses SR 152 and enters a short tunnel to pass into the Pacheco Creek Valley. This is shown in Figure 3.9-12—HST Crossing South of Gilroy. Once in the Pacheco Creek Valley, the line runs north of SR 152 along a series of cuts and fills until passing over the highway near Bell station.

The natural open space landscapes along SR 152 in Pacheco Creek Valley east of Gilroy are characterized by coastal mountains and mountain valley topography typified by rolling to steep-sloped grassland with shrubs, clusters of oaks and other native tree species, and wooded bottomland. Much of this area is part of the Henry Coe State Park and Mount Hamilton Project Area of The Nature Conservancy (described in Section 3.15, Biological Resources and Wetlands), which is designed to preserve the rich natural habitats in a 780–sq mi (1255–sq- km) area of the Diablo Range. Small farms or ranches (in bottomlands), isolated roadside businesses (e.g., Casa de Fruta), and widely dispersed small communities characterize the landscape.

A simulation of the crossing of SR 152 in the Pacheco Creek Valley is provided in Figure 3.9-13—HST Viaduct in Pacheco Creek Valley. South of the highway, the line would enter a series of tunnels and cut and fill sections, passing back to the north side of the highway in a cut just west of the pass. The line would curve north of the San Luis Reservoir and Cottonwood Bay, again partially in tunnels and partially on cut and fill sections. The visual impact of this section of the line over the pass varies from none where the line is in a tunnel, to a medium impact where there are deep cuts or fills, to a high impact where the line crosses above the highway on a viaduct. North of San Luis Reservoir, the line can diverge to one of three alignment alternatives: GEA North, Henry Miller (UPRR Connection), and Henry Miller (BNSF Connection).

The GEA North alignment alternative would cross Romero Creek and enter a series of tunnels and cut and fill sections to reach the edge of the Central Valley near the Pat Brown Aqueduct and I-5. It would turn north on an embankment to pass around the town of Gustine. The landscape transitions from the parks and open space of the Pacheco Pass to the rural agriculture of the western Central Valley. This would have a high visual impact where it crosses I-5. It would introduce a new transportation infrastructure crossing from the hills to the valley on an embankment over the freeway. I-5 in this area is a designated state scenic highway.

Passing west and north of Gustine, the line would turn toward the east and run north of SR 140. Landscape in this area is a mixture of rural agriculture and wetlands open space. The line passes near the Great Valley Grasslands State Park and the Fremont Ford State Recreation Area. It would cross wetlands on low-level elevated structures. The introduction of the HST to the open space and parklands would be a medium visual impact because the line would be low to the ground and blend with the horizontal landscape.

The GEA North alignment alternative would continue across the rural agricultural landscape of the Central Valley to meet the Central Valley BNSF mainline between the communities of Atwater and Merced. As the line approaches the urbanized area, the landscape shifts to a mix of urban suburban and rural agricultural.

Figure 3.9-11
Caltrain/UPRR along Monterey Highway

Figure 3.9-12a
HST Crossing South of Gilroy

Figure 3.9-12b
HST Crossing South of Gilroy
Project Simulation

Figure 3.9-13a
HST Viaduct in Pacheco Creek Valley

Figure 3.9-13b
HST Viaduct in Pacheco Creek Valley
Project Simulation

The GEA North alignment alternative would split south of Livingston and curve to the north, eventually parallel to Arena Way. The introduction of the railway to a new alignment across the agricultural landscape would have a low visual impact. Near the existing BNSF railway, the line would cross the Merced River on a new alignment. This new river crossing would have a medium visual impact to the riparian landscape along the river.

Both the BNSF and UPRR Henry Miller alignment alternatives would run across the Central Valley just north of Henry Miller Avenue. The line would exit the hills east of Pacheco Pass and follow Romero Creek. This takes the line past the San Joaquin National Cemetery in a trench, where the line would have a medium visual impact, introducing a major transportation facility to an open landscape designated for reflection and quiet. This area is shown in Figure 3.9-14—Romero Creek from San Joaquin National Cemetery. The alignment alternative would also pass the O'Neill Forebay of the California Aqueduct and the San Luis Reservoir State Recreation Area.

The line would pass through the roadside community of Santa Nella and cross I-5, which is a designated state scenic highway in this area. The impact of the highway crossing is low because the railway crosses in an area where the landscape comprises highway-commercial uses and an existing roadway overcrossing.

East of Santa Nella, the line would traverse a landscape of rural agriculture and wetlands open space, including a number of state and federal wildlife areas. The alignment alternative would be placed on a low structure to cross the wetland areas. A simulation of this is shown in Figure 3.9-15—HST Viaduct along Henry Miller Avenue. The introduction of the HST to the open space and parklands would be a medium visual impact because the line would be low to the ground and would blend with the horizontal landscape. The line would be visible from the Volta Wildlife Area and Los Banos Wildlife Area.

West of the city of Chowchilla, the Henry Miller (UPRR Connection) and Henry Miller (BNSF Connection) alignment alternatives would partially split. The leg connecting to the UPRR northbound would turn north from the alignment and cross agricultural lands to meet the Central Valley UPRR N/S alignment alternative north of the city of Chowcilla. The Henry Miller (UPRR Connection) southbound leg would continue east before turning south to meet the Central Valley UPRR N/S alignment alternative near the town of Fairmead. This alignment alternative, both the north and south legs, would have a low visual impact because it would run at grade.

The Henry Miller (BNSF Connection) alignment alternative would pass to the south of the city of Chowchilla. After crossing SR 99, the line divides into two legs to connect with the Central Valley HST line (BNSF alignment alternative) near the Valley State Prison for Women. The two legs would have a low visual impact because they would run at grade.

Historic Buildings, Neighborhoods, Landscapes

In San Jose, the HST is to be accommodated at the Diridon station by building a concourse and up to six HST tracks and three platforms above the existing platforms. The San Jose Diridon station is a designated historic property listed on the National Register of Historic Places. The station dates to 1935, with architectural features characteristic of that period. The proposed platforms for the HST would be located at 45 ft (13.7 m) above grade. The platforms would extend more than 1,400 ft (400 m), with additional length at either end for the track fans (switches and trackwork to allow the two-track mainline to serve all six station tracks). A canopy covering the HST platforms would extend the building height to 70 ft (21 m). The City of San Jose is planning an intensification of land uses in and around the Diridon station, so the expanded HST station location option would constitute a medium visual impact, given that it would be a much longer and taller structure than the existing station building but in a setting that is proposed to have many larger buildings developed in the area.

The San Jose to Central Valley corridor south of the urbanized areas of San Jose traverses a largely rural and agricultural landscape. Historic buildings, like the 21-Mile House in Morgan Hill, no longer exist. The Gilroy Caltrain station would be visually affected by the HST, but the impact can be minimized though careful and thoughtful design. The traditional small town landscape present at the core of Morgan Hill and Gilroy has coexisted with the railway for all of their histories. The visual impact of the HST project is medium, compared with the contrast of recent commercial and residential suburban growth.

In this corridor, most of the visual impact would be from adding new transportation infrastructure into an undeveloped rural landscape. The historic character of Monterey Highway, immediately adjacent to the UPRR and proposed HST alignment, would be affected by the removal of mature trees that visually separate the highway from the railroad. This is shown in the context of the urban suburban landscape of South San Jose in Figure 3.9-10. In many places, the trees are denser and older than the surrounding landscape. Their removal to expand the rail corridor to accommodate HST would have a medium visual impact on the views along much of the Monterey Highway.

To pass from the UPRR right-of-way to the SR 152 corridor, the HST would develop a new transportation corridor across agricultural and open space, not aligned with any existing grid of roads or natural features. This would have a medium visual impact on the existing landscape, but that impact can be lessened by keeping the HST at grade and planting native flora along the right-of-way.

Through the Pacheco Creek Valley, the railway would follow the existing highway corridor. The major visual landmarks along the highway, such as Elephant Head (a large rock outcropping), would not be visually affected by the railway. As the valley narrows, the railway would be mostly out of sight, running in tunnels.

East of Pacheco Pass, the HST would follow Romero Creek past the San Joaquin Valley National Cemetery. The alignment would be in trench as it passes the cemetery, crossing northeast of the entry road to the cemetery. This would have a medium visual impact on the landscape and the cemetery's remote and quiet setting.

The three alignment alternatives across the valley would pass through similar landscapes, including grasslands and wetlands. The HST infrastructure would have an impact on these open landscapes, but the impact can be minimized by running at grade and planting native flora along the line.

Affected Views from State Scenic Highways

There are a number of state scenic highways in the corridor. Designated state scenic highways, as of November 2006, include I-5 in Stanislaus County and north of SR 152 in Merced County and SR 152 in Merced County west of I-5. State highways eligible but not officially designated as scenic include SR 152 in Santa Clara County east of SR 156. All of these highways, both designated and eligible, are considered in this analysis.

The crossing of I-5 could take place in one of two locations. The GEA North alignment alternative would create a high visual impact because it would take place in an open landscape where the elevated crossing would be visible from a great distance along the freeway. The Henry Miller alignment alternatives would cross at an existing roadway overcrossing in the highway-commercial landscape of Santa Nella. This crossing would have a low visual impact because the landscape is dominated by the existing highway overcrossings and the commercial landscape along the freeway.

The line would be visible from many points along SR 152 in Santa Clara and Merced County, especially in the Pacheco Creek Valley. The visual impact of the line would vary from low to high, relative to the specific location. Where the line parallels the highway, it would have a low visual impact, with hills continuing to dominate the landscape. At the locations where the line passes over

Figure 3.9-14
Romero Creek from San Joaquin National Cemetery

Figure 3.9-15a
HST Viaduct along Henry Miller Avenue

Figure 3.9-15b
HST Viaduct along Henry Miller Avenue Project Simulation

the highway, the elevated crossing would dominate the view from the highway, having a high visual impact. In other locations, where the railway runs on a high fill, the line would have a medium visual impact, lessening over time as the embankment is engulfed by the local flora.

East Bay to Central Valley Corridor

This corridor extends from the Niles Junction area of Fremont in the Bay Area to Manteca and Escalon in the Central Valley. The corridor generally parallels SR 84, the UPRR, I-580, I-205, and SR 120. There are four alternative alignments between Fremont and I-580 in San Joaquin County and four alternative alignments between I-580 and the UPRR in Manteca and BNSF in Escalon. The first four alternatives vary in their routes across the Amador and Livermore valleys and their routes across the hills into the Central Valley. The second four vary in following one of two routes through or around the city of Tracy and in which Central Valley HST alignment alternative, UPRR N/S or BNSF, they connect to.

Visual Impacts

The I-680/580/UPRR, I-580/UPRR, Patterson Pass/UPRR and UPRR East Bay to Central Valley alignment alternatives all begin near Niles Canyon in the hills west of Fremont, at the east end of the Dumbarton, Fremont Central Park corridor and East Bay Connection. The alignment alternatives begin in a tunnel, beneath the hills between Niles Canyon and Morrison Canyon, and continue in a northeast direction beneath Alameda Creek and Niles Canyon, Sunol Ridge, and Pleasanton Ridge before emerging just north of Castlewood Country Club at Foothill Road. Leaving the tunnel, the alignment alternatives run in a trench towards I-680, resulting in a low visual impact.

Near I-680, the four alternative alignments diverge. The I-680/580/UPRR alternative would turn to follow I-680 and I-580 to the base of the Altamont Pass. The HST would be placed on an elevated structure alongside I-680. The structure would have a medium visual impact on the adjacent residential neighborhoods and potential shadow impacts. It would turn from the freeway right-of-way and cross a commercial development and water ponds before entering the median of I-580, elevated above the BART tracks. The aerial structure, as it arcs between the two freeways, would create medium visual impacts. Its scale would be consistent with the highway ramps at the freeway interchange but it would be well outside the highway, affecting neighboring land uses.

Once in the median of I-580, the line would remain elevated above the median and BART tracks and Dublin-Pleasanton station. The elevated structure would be between 26 ft (7.9 m) to 50 ft (15.2 m), reaching the maximum when passing over highway overpasses. The aerial structure would be a dominant linear feature along the freeway. The landscape along the freeway is predominantly industrial and commercial, with some residential east of the BART station. While the aerial structure would be visible, it would be compatible with the freeway, which would continue to dominate the landscape. This is illustrated in Figure 3.9-16—HST at I-580/680 Interchange.

There are three station location options along the I-580 corridor, at the Pleasanton BART station, North Livermore, or at Greenville Road. Regardless of the location, all would be configured roughly the same. The HST would be elevated above the median of the freeway. The elevated station would introduce a 26 ft (7.9 m) to 40 ft (12.1 m) structure above the freeway. The station would extend more than 1,400 ft (400 m), with additional length at either end for the track fans (switches and trackwork) to allow the two-track mainline to split to four tracks. The center tracks would serve non-stopping trains, while the outer tracks would serve a pair of outside platforms. The platforms would be connected by elevators and escalators to potential regional rail facilities in the median of the freeway and to a pedestrian undercrossing to connect to the station building on the side of the freeway right-of-way. The structure would have a high visual impact because it would extend up to 0.5 mi. A canopy covering the HST platforms would extend the building height to 70 ft (21 m).

The Pleasanton BART station location option would locate the HST station above the existing Pleasanton BART station. The North Livermore station location option would be along I-580 just west of the North Livermore interchange. The proposed station is on property owned by BART for a future station and maintenance yard. South of the site is residential development. To the north of I-580 is open space. The Greenville Road station location option would be located just east of Greenville Road.

East of the Livermore station, the line would continue elevated in the median of I-580. The elevated structure would be between 26 ft (7.9 m) to 50 ft (15.2 m), reaching the maximum when passing over highway overpasses. The aerial structure would be a dominant linear feature along the freeway. Open space and residential landscapes dominate the north side of the freeway, while the south side is predominantly industrial and commercial. While the aerial structure would be visible, the freeway would continue to dominate the landscape.

As I-580 begins to climb to the Altamont Pass, the HST would remain in the median of the freeway until passing under the westbound lanes and crossing Carroll Road on an elevated structure and entering a tunnel under the pass. The HST would emerge from the tunnel and pass under the west and eastbound lanes of I-580 to the south of the freeway to meet the UPRR alignment alternative. As the HST passes under the freeway, the visual impact would be low. The alignment alternative meets with the other alignment alternatives near the I-580 freeway in San Joaquin County.

The I-580/UPRR, Patterson Pass/UPRR, and UPRR alignment alternatives would share the same alignment from I-680 to east of downtown Livermore, following the UPRR line through Pleasanton and Livermore.

Starting at I-680, the alignment alternatives would follow above the existing railroad right-of-way through the traditional small urban community of central Pleasanton, where the elevated structure would have a medium visual impact, running above the cross-streets and existing railroad. It would have potential shadow impacts on adjacent residential uses.

East of central Pleasanton, the I-580/UPRR alignment alternative would swing north towards I-580 at grade. The line would cross an area of gravel pits and open fields, creating a low visual impact. At I-580, the line would transition to an elevated configuration above the median of I-580. The North Livermore station location option would be along I-580 just west of the North Livermore interchange. The proposed station location option is on property owned by BART for a future station and maintenance yard. South of the site is residential development. To the north of I-580 is open space. The Greenville Road station location option would be located just east of Greenville Road.

East of the Livermore station, the line would continue elevated in the median of I-580. The elevated structure would be between 26 ft (7.9 m) to 50 ft (15.2 m), reaching the maximum when passing over highway overpasses. The aerial structure would be a dominant linear feature along the freeway. Open space and residential landscapes dominate the north side of the freeway, while the south side is predominantly industrial and commercial. While the aerial structure would be visible, the freeway would continue to dominate the landscape.

As I-580 begins to climb to the Altamont Pass, the HST would remain in the median of the freeway until passing under the westbound lanes and crossing Carroll Road on an elevated structure and entering a tunnel under the pass. The HST would emerge from the tunnel and pass under the west and eastbound lanes of I-580 to the south of the freeway to meet the UPRR alignment. As the HST passes under the freeway, the visual impact would be low. The alignment alternative meets with the other alignment alternatives near the I-580 freeway in San Joaquin County.

Figure 3.9-16a
HST at I-580/680 Interchange

Figure 3.9-16b
HST at I-580/680 Interchange
Project Simulation

The Patterson Pass/UPRR and UPRR alignment alternatives would descend to an at-grade alignment by Valley Boulevard. The line would run on the north side of the existing UPRR tracks and Stanley Boulevard past a landscape dominated by active and reclaimed gravel pits. The landscape along Stanley Boulevard between Pleasanton and Livermore is best described as industrial open space. The existing operating gravel pits are characterized by large industrial conveyor belts, silos, and constant truck activity. Some reclaimed pits have been transformed into Shadow Cliffs Regional Park, with beaches and lakes. The parklands are well below the grade of the surrounding landscape, at the bottom of the reclaimed pits. This obscures many of the local views from the pits, including that of the adjacent railway and roadway, limiting the visual impact of existing and potential transportation infrastructure.

The Patterson Pass/UPRR and UPRR alignment alternatives would pass through Livermore at-grade along the existing UPRR right-of-way. To accommodate a station in downtown Livermore, the HST would need to expand from two to four tracks. This would require the acquisition of some residential and commercial properties north of the existing rail right-of-way but would allow the station to be built at grade. This would lessen the visual impact of the station, creating a low visual impact, because the station building would be of similar scale to other buildings in the downtown area. A simulation of this is shown in Figure 3.9-17—HST at grade in Livermore.

East of downtown Livermore, near North Mines Road, the Patterson Pass/UPRR and UPRR alignment alternatives diverge.

The Patterson Pass/UPRR alignment alternative would continue to follow the UPRR tracks to just east of Greenville Road, where it would turn to due east and pass over the hills in a series of cuts and fills. West of I-580, the alignment alternative would rejoin the other alignment alternatives. Because the Patterson Pass alignment alternative crosses the hills on a repeated series of cuts and fills, none too severe, the visual impact would be low.

The UPRR alignment alternative would leave the UPRR line and follow the former Southern Pacific Railway line toward Greenville Road. The Greenville Road station location option is located just east of Vasco Road. The station would be at grade, with four tracks: two inside for through HST, and two outside for stopping trains, served by a pair of platforms. The at-grade configuration in a landscape dominated by industrial distribution warehoused would result in a low visual impact.

As the alignment alternative nears the hills, it would climb on an embankment and then transition to a tall structure as it passes over Greenville Road into the hills. Once in the open space of the Altamont Pass, the line would make a cut on its run to the summit. The cut would be deep but less visually dominant than the existing 8-lane freeway, resulting in a medium visual impact. Near the summit, this alignment alternative meets the I-580 alignment alternative.

Just west of the North Flynn Road interchange, the HST is in a deep cut to the north of the existing freeway. This is shown in Figure 3.9-18—HST alongside Freeway, Altamont Pass.

The landscape of the Altamont Pass is open space characterized by treeless, grassy hills and a multitude of wind turbines. It is crossed by two major transportation corridors and a third abandoned one. The I-580 freeway is an eight-lane facility with very heavy traffic volumes. It dominates the area, with each direction of the freeway on different alignments on the east side of the pass. The UPRR is visually obvious as it passes through the area, but it does not dominate the landscape because it is only a single-track railway, about 15% the width of the freeway. The former Southern Pacific Railroad grade is still clearly visible, including the cuts and fills, but the right-of-way has been reclaimed by grasses. The hillsides away from the freeway are dominated by lines of wind turbines. There are over 4,000 wind turbines in the Altamont Pass area. A view is shown in Figure 3.9-19—I-580, Altamont Pass. The introduction of a new HST alignment alternative to this landscape

would have a low visual impact because it would be complementary to the existing railway and highway earthworks. The line would cross large cuts and fills as it descends to the Central Valley, down the east side of the pass. It would run in the same area, south of the freeway, as the existing and abandoned railway lines but would take a straighter and steeper route. The UPRR alignment alternative meets the I-680/580/UPRR and I-580/UPRR alignment alternatives just east of the Altamont summit, and the three share a common alignment until meeting the Patterson Pass/UPRR alignment alternative just west of I-580 in San Joaquin County.

There are four alignment alternatives between I-580 and Manteca and Escalon. A pair of alignment alternatives, the Tracy ACE Station (BNSF Connection) and Tracy ACE Station (UPRR Connection), would share a common alignment to the south of Tracy until diverging near Oakwood Lake, southwest of Manteca. The other pair of alternative alignments, the Tracy Downtown (BNSF) and Tracy Downtown (UPRR), would pass through the City of Tracy and diverge west of Oakwood Lake.

The Tracy ACE Station (BNSF Connection) and Tracy ACE Station (UPRR Connection) alignment alternatives run down out of the hills in a southeasterly direction, crossing I-580 near the Corral Hollow Road interchange. I-580 is a designated state scenic highway in San Joaquin County. The structure to carry the HST across the freeway and adjacent canals would be visible from a distance along the freeway. The landscape in the area is predominately open space, and the freeway runs in a straight line for miles in each direction. However, the impact of the rail crossing would be lessened by the existing adjacent highway overcrossing, resulting in a medium visual impact.

Once across the freeway, the alignment alternatives would curve to the northeast as they cross the Edward G. Brown Aqueduct and the Delta-Mendota Canal, still on an elevated structure. Once over the canals, the line would descend to grade. The route would pass south of the Tracy Municipal Airport and join the UPRR right-of-way near Linne Road.

A potential station location option is planned to serve Tracy along this route west of South Banta Road near the San Joaquin Defense Depot. The proposed station would consist of four tracks and two island platforms above a station concourse. The tracks and platforms would be elevated about 26 ft (7.9 m) above grade, with the platform shelter canopies extending to about 40 ft (12.1 m). The station would be more than 1,400 ft (400 m), with additional length at either end for the track fans (switches and trackwork) to allow the two-track mainline to split to four tracks. While this would be a large structure, it would not be as dominant as the Defense Depot buildings in the surrounding industrial and rural agricultural landscape.

The Tracy ACE Station (BNSF Connection) and Tracy ACE Station (UPRR Connection) alignment alternatives would continue to follow the UPRR, passing under I-5. Near Oakwood Lake, the northbound leg of the Tracy ACE Station (UPRR Connection) would diverge and connect with the Central Valley UPRR N/S alignment alternative near Lathrop. This connection, at grade, would be a low visual impact. The Tracy ACE Station (BNSF Connection) and Tracy ACE Station (UPRR Connection) southbound leg would cross into the median of SR 120 just east of I-5. The line would have a low visual impact along the freeway. The connection to the UPRR would be made near the intersection of SR 120 and SR 99.The Tracy ACE Station (BNSF Connection) would continue east past the intersection of SR 120 and SR 99 in the right–of-way of the future SR 120 freeway. The northbound connection to the BNSF would turn to the north east of the city of Escalon to join the BNSF alignment north of Escalon. The southbound connection would continue east until turning south to join the BNSF alignment south of Escalon. The HST would have a low visual impact as it passes through orchards and groves on the way to the BNSF line in Escalon.

The Tracy Downtown (BNSF Connection) and Tracy Downtown (UPRR Connection) alignment alternatives would leave the hills with a series of cut and fill sections. Near I-580, they would curve to the northeast and transition to an aerial structure to cross the UPRR, I-580, and adjacent canals.

Figure 3.9-17a
HST at grade in Livermore

Figure 3.9-17b
HST at grade in Livermore
Project Simulation

Figure 3.9-18a
HST alongside Freeway, Altamont Pass

Figure 3.9-18b
HST alongside Freeway, Altamont Pass
Project Simulation

Figure 3.9-19
I-580, Altamont Pass

I-580 is a designated state scenic highway in San Joaquin County. The landscape in the area is predominately open space south of the proposed crossing and a mix of open space and warehousing/industrial north of the crossing. The freeway runs in a straight line for miles in each direction, so the structure to carry the HST across the freeway would be visible from a distance along the freeway. The visual impact would be medium because the large warehousing complex is also a dominant feature in the landscape.

Across the canals, the line joins the former Southern Pacific (now UPRR) rail right-of-way to cross through Tracy. The landscape along the right-of-way is urban suburban, with new residential neighborhoods behind soundwalls that line the rail right-of-way. The introduction of HST to the area would be a low visual impact because the surrounding neighborhoods are already shielded from the rail corridor. This is shown in Figure 3.9-20—Rail Corridor in Tracy.

East of Schulte Road, the line would transition to an aerial structure into the Downtown Tracy station location option. The station would be elevated about 26 ft (7.9 m) above grade, with the platform shelter canopies extending to about 40 ft (12.1 m). The station would be more than 1,400 ft (400 m), with additional length at either end for the track fans (switches and trackwork) to allow the two-track mainline to split to four tracks. The landscape surrounding the station location option is a mix of urban suburban and traditional small urban community. The station would dominate the area because it would be of a significant size, making a medium visual impact.

East of the station location option, the tracks would transition back to grade. They would run alongside the existing freight tracks, passing under 11th Street and I-205. They would meet the Tracy ACE Station (BNSF Connection) and Tracy ACE Station (UPRR Connection) near Oakwood Lake, near the intersection of I-5 and SR 120.

Near Oakwood Lake, the northbound leg of the Tracy Downtown (UPRR Connection) alignment alternative would diverge and connect with the Central Valley UPRR N/S alignment alternative near Lathrop. This connection, at grade, would be a low visual impact. The Tracy Downtown (BNSF Connection) and Tracy Downtown (UPRR Connection) southbound leg would cross into the median of SR 120 just east of I-5. The line would have a low visual impact along the freeway. The connection to the UPRR would be made near the intersection of SR 120 and SR 99.The Tracy Downtown (BNSF Connection) would continue east past the intersection of SR 120 and SR 99 in the right of way of the future SR 120 freeway. The northbound connection to the BNSF would turn to the north east of the City of Escalon to join the BNSF alignment north of Escalon. The southbound connection would continue east until turning south to join the BNSF alignment south of Escalon. The HST would have a low visual impact as it passes through orchards and groves on the way to the BNSF line in Escalon.

Historic Buildings, Neighborhoods, Landscapes

The East Bay to Central Valley corridor passes through landscapes that were largely rural agricultural until a few decades ago. Many of the historic buildings in the corridor have either been destroyed or engulfed by the newly built urban suburban landscape.

The HST would cause a visual impact on the traditional small urban community landscape of the residential areas along the UPRR right-of-way in central Pleasanton. The alignment alternative through Downtown Tracy would also be visually affected by a HST station location option adjacent to its downtown.

The scenic landscape along Alameda Creek in Niles Canyon would be unaffected by the HST because the alignment alternative would be in a tunnel though the area. Over Altamont Pass, the HST would make deep cuts into the hills, but the freeway and thousands of wind turbines would continue to dominate the visual landscape.

Affected Views from State Scenic Highways

There are a number of state scenic highways in this corridor. Designated state scenic highways, as of November 2006, include I-680 in Alameda County and I-580 in San Joaquin County. State highways eligible but not officially designated as scenic include I-580 in Alameda County and SR 84 in Alameda County between SR 238 in Fremont and Interstate 680. All of these highways, both designated and eligible, are considered in this analysis.

SR 84 at the mouth of Niles Canyon would be affected by the East Bay connector between the East Bay to Central Valley corridor and the Oakland to San Jose corridor with a partially elevated, partially at-grade line crossing Alameda Creek and SR 84. SR 84 through Niles Canyon would not be visually affected by the HST because the alignment alternative would be in tunnels through the area.

The aerial HST along I-680 would create a medium visual impact because the structure would dominate views of the hills from the freeway. I-680 would also experience a medium visual impact as the line passes above the freeway and crosses to follow I-580 toward Livermore.

I-580 in Alameda County would be visually affected, especially at the freeway median station sites, if the alignment alternative along I-680 and I-580 were used. Views from I-580 through the Altamont Pass would be minimally affected by the cuts to take the HST Alignment Alternative through the hills. This is shown in 3.9-19.

I-580 in San Joaquin County would be visually affected where the HST crosses the freeway. Details are noted in the text above.

San Francisco Bay Crossings Corridor

There are two Trans Bay Crossing alignment alternatives between Oakland and San Francisco and six alignment alternatives between Redwood City and western mouth of Niles Canyon in Fremont, crossing the bay at Dumbarton. The Trans Bay Crossing alternatives both begin in Oakland, connecting with the Oakland-San Jose corridor and proceeding in a tunnel under San Francisco Bay. One Transbay alternative terminates at the Transbay Transit Center in Downtown San Francisco. The other terminates at the Caltrain 4th and King station in the South of Market neighborhood. The six alignment alternatives between Redwood City and Fremont are divided into three Dumbarton alternatives and three Fremont Central Park alternatives. The six alternatives share the same horizontal alignment between the Caltrain corridor in Redwood City and the eastern edge of the bay in Newark. There are three vertical alignments considered for the Dumbarton and Fremont Central Park bay crossings: a high bridge, low bridge, and underwater tunnel. The Dumbarton alignment alternative crosses Newark and Fremont along the UPRR Centerville line. The Fremont Central Park alignment alternative follows a powerline corridor across Fremont.

Visual Impacts

The two Transbay alignment alternatives differ by their terminus in San Francisco. One begins at the Townsend Street station beneath Townsend Street between Fourth and Fifth Streets in San Francisco's South of Market district and runs beneath Townsend Street to the Bay. The second begins beneath the Transbay Transit Center and runs beneath Main Street to the Bay. Each alternative leaves San Francisco in the vicinity of Pier 38-40 and crosses the Bay in a tunnel. The alignment alternatives make landfall at the southwest corner of the former Alameda Naval Air Station. At this location, the line would split, with one alignment alternative turning north to cross beneath the estuary and Port of Oakland to meet the Oakland-San Jose line at the West Oakland station location option. A second alignment alternative would run northeast to pass beneath the estuary and cross the alternate Oakland-San Jose line perpendicularly at the West Oakland station location option. This line would connect to the 12th Street/City Center Oakland alignment alternative from the Oakland to San Jose corridor. All of the Transbay alignment alternatives would be underground.

Figure 3.9-20
Rail Corridor in Tracy

There would be ventilation shafts along the alignment alternative. These structures would be visible, but most would be a minor alteration to the visual landscape in which they are located.

The Dumbarton alignment alternative begins in Redwood City, where the route leaves the Caltrain line and turns east along the existing Dumbarton rail line at grade through the urban suburban landscape. East of Willow Road, the route would approach the San Francisco Bay. There are three options for the bay crossing at Dumbarton—a high bridge where the main span would provide complete clearance over the shipping channel, a low bridge with a moveable span at the shipping channel, and a bored tunnel under the bay. All would occupy generally the same horizontal alignment. All alignment alternatives would remove the existing railway trestle and drawbridge, built in 1910, and all would run through the Don Edwards San Francisco Bay National Wildlife Area.

The landscape of the Dumbarton crossing is one of low horizontal baylands and wetlands, traversed by power lines, the Dumbarton highway bridge (SR 84), and pipe trestles that carry the Hetch Hetchy aqueduct across the bay and the rail bridge. See Figure 3.9-21—Dumbarton Landscape. The high rail bridge alignment alternative would replace the existing low-level rail bridge with a bridge closer in appearance to the existing highway bridge, but longer and narrower. The added length of the high level alignment alternative would create a medium visual impact to the view from the existing highway when contrasted with the low, horizontal views of the wetlands, but it would create a complementary view when viewed from the wetlands, creating matching bridges and removing the low-level bridge and its contrasting form, resulting in an overall medium visual impact. This is illustrated in Figure 3.9-22—Dumbarton High Bridge.

The low-level bridge alignment alternative would result in a minimal visual impact because it would be low to the Bay like the existing rail bridge and aqueduct trestles but could be designed as a more horizontal structure to complement the landscape of the wetlands. It would also span a longer distance than the existing rail bridge, allowing the wetlands to flow beneath the railway. A visual simulation of the low bridge alignment alternative is shown in Figure 3.9-23—Dumbarton Low Trestle.

A tunnel beneath the Bay would have no visual impact because it would place the HST underground and out of sight, with the exception of venting structures. The existing rail bridge would be removed, along with the existing railway embankment. A visual simulation of the tunnel option is shown in Figure 3.9-24—Tunnel Crossing at Dumbarton.

Soon after leaving the baylands, the line would be elevated. The elevated structure would be between 26 ft (7.9 m) to 50 ft (15.2 m). This would introduce a new elevated lineal element into the immediate landscape. The structure would have a medium visual impact on residential areas along the corridor, including shadow impacts, especially where the structure ascends to its maximum height to cross above highway overcrossings of the existing railway. The alignment alternative would cross the UPRR Coast Line and then leave the rail right-of-way to avoid a series of very sharp curves. The route would run elevated though a neighborhood of single and multi-family homes, requiring the acquisition and removal of some homes. This would create a high visual impact because the new elevated rail structure would be in high contrast to the existing neighborhood form and character, both in its horizontal and vertical alignment. It would cross the existing street grid at an angle, breaking the repeating grid of homes in many places. It would create shadow impacts to the remaining residential uses and Civic Center Park. East of Civic Center Park, the line would remain elevated, but it would be within the right-of-way of the UPRR.

The elevated line would pass the Centerville Depot (1910), in use today for Amtrak and ACE trains. The elevated structure would make a high visual impact on the area and create shadow impacts on the depot and plaza.

Immediately east of the BART line, an HST station location option could be provided at Shinn Street to allow interchange between the HST and BART. The station would be an elevated four track station. The total height of the station, including the canopies over the HST platforms, would extend up to 65 ft (20 m) for more than 1,400 ft (400 m). This would result in a large structure that would be the most visually dominant feature in the surrounding urban suburban landscape, creating a high visual impact. Leaving the station, the line would leave the rail right-of-way and pass over a water feature (pond) in a former gravel pit. It would then cross a residential neighborhood, requiring the removal of some homes, before entering the foothills. The elevated line in the urban suburban residential landscape would create a high visual impact.

As the HST line enters the hills east of Fremont, the route would meet the alignment alternative through Fremont and the East Bay to Central Valley corridor.

The Fremont Central Park alignment alternatives would follow the same alignment as the Dumbarton alternatives from Redwood City to the east side of San Francisco Bay, with the same three options for the bay crossing and the same visual impacts. Once across the bay, the line would run to the south of the Dumbarton route. It would begin at the edge of the baylands and curve to the south across salt ponds. The introduction of the rail line to the open space of the salt ponds would create a medium visual impact. The horizontal landscape of the salt ponds is already crossed by a number of high tension power lines, and the addition of the catenary for the HST electrification would be a similar visual component to the landscape.

The line would then turn east and transition to an elevated structure to cross the UPRR Coast line and continue elevated across the industrial landscape of Newark. A station location option would be provided just east of Boyce Road. The elevated station would be up to 45 ft (13.7 m) tall and more than 1,400 ft (400 m) long. While this would be a large structure, it is not out of scale with the existing industrial landscape, having a low visual impact.

The route would continue along an industrial railway spur, cross over I-880, and follow a power line corridor through an urban suburban residential landscape. The elevated route would pass Blacow Park, creating shadow impacts. East of Blacow Park, the line would transition into an underground alignment, continuing beneath the power line right-of-way. After passing beneath Paseo Padre Parkway, the alignment alternative would pass to the east of Fremont Central Park along the existing UPRR line. Through this area, there would be low visual impact from the at-grade line. Here the alignment meets the Oakland-San Jose corridor and the East Bay to Central Valley corridor.

Historic Buildings, Neighborhoods, Landscapes

The Transbay alignment alternatives would pass beneath the South Beach Historic District in San Francisco. There are also historic buildings on the former Naval Air Station in Alameda, including the former hangers, which form a historic landscape. The Transbay alignment alternatives are underground, so they would have no impact on the historic district or buildings.

The Dumbarton and Fremont Central Park alignment alternatives would cross the Don Edwards San Francisco Bay National Wildlife Area, a nationally significant open space. Depending on the type of Bay crossing, the visual impact would vary. A high-level bridge would have an overall medium visual impact on the open space of the bay and wetlands. The high bridge form would complement the existing highway bridge. The extended length of the crossing, relative to the existing bridge, would extend the form of the high bridge across a greater part of the landscape. A low-level bridge would have a lesser impact because it could be designed to complement the horizontal landscape of the bay and wetlands to a greater degree than the existing steel truss railroad bridge. A tunnel would have no visual impact.

Figure 3.9-21
Dumbarton Landscape

Figure 3.9-22
Dumbarton High Bridge

Figure 3.9-23
Dumbarton Low Trestle

Figure 3.9-24
Tunnel Crossing at Dumbarton

The Dumbarton alignment alternatives would require an elevated alignment past the historic Centerville Depot in Fremont. The depot was built in 1910 and is the last remaining Southern Pacific "Number 23"-style depots in service as a train station, and one of only less than a dozen left in the state of California. An elevated HST line past the station would create a high visual impact and cause shadow impacts on the historic depot.

The community of Niles was home to the early film industry and the Essanay Film Manufacturing Company studios filmed many movies in the area. The Vallejo Mill Historical Park, at the northeast corner of Niles Canyon Road and Mission Boulevard, (SR 238) commemorates the flower mill (1856) of José de Jesús Vallejo, brother of General M. G. Vallejo, on his Rancho Arroyo de la Alameda. The elevated structure and cut and fills required to bring the Centerville alignment alternative into Niles Canyon would be visible from the mill, but the line would have a low visual impact on these historic sites because the landscape surrounding them has been altered significantly by development over the past 150 years.

Affected Views from State Scenic Highways
There are no state scenic highways, designated or eligible, in this corridor.

Central Valley Corridor

This corridor extends from Lodi, through Stockton and Merced, to near Madera. There are six HST alignment alternatives. Alignment alternatives include connections between the UPRR and BNSF right-of-ways that provide alternatives that use all or portions of each rail line.

Visual Impacts
The two existing rail lines in the Central Valley are the UPRR, which generally runs adjacent to SR 99 and through the center of many communities, and the BNSF, which runs to the east of most of the valley communities between Stockton and Fresno. The UPRR alignment was originally the Southern Pacific alignment, the first railway in the Central Valley. Construction of this railway lead to the development of towns that centered on the railway station. The BNSF came later, after the towns had developed. This results in a UPRR line today that runs through more urbanized areas, while the BNSF line is still in mostly agricultural areas.

Any alignment alternative would result in the construction of a new, two-track, fully grade separated high speed railway in or adjacent to an existing railway right-of-way. In many cases, grade separations would cross both the high speed line and the existing (or relocated) freight railway. Except at stations and where soundwalls are erected, these new grade separations would be the main visual impact of the HST in this corridor.

Adding a two-track high-speed railway to the UPRR N/S alignment alternative would require fewer new grade separations because there are many existing grade separations along the line, especially where it runs adjacent to SR 99. The new separations would be mainly in the center of communities. Use of this rail line would likely require more soundwalls because it runs in a generally more developed corridor. Visual impacts from potential station location options in Stockton, Modesto, Merced, and Fresno would be generally the same as those of the BNSF line because both share many of the same station options.

The BNSF alignment alternative is more rural in nature. More new grade separations would be required, but they would be in open landscapes and likely not as complex as the separations required along the UPRR N/S alignment alternative. There would also likely be fewer soundwalls required.

The UPRR N/S, UPRR-BNSF Castle, and UPRR-BNSF alignment alternatives begin near the town of French Camp, just south of Stockton, where the line would rise to cross a rail yard. Past the rail yard, an alternative connection to the BNSF diverges. The BNSF connection alignment would turn to

the east on a new alignment, crossing agricultural landscapes before meeting the existing BNSF line near Five Corners. This alignment alternative would cross above SR 99 on an elevated structure, creating a medium visual impact from the highway.

The remaining UPRR alignment alternatives would follow the existing railway through the city of Manteca, through agricultural, urban suburban, and traditional small urban community landscapes. The line would be elevated as it passes through central Manteca, creating a low visual impact because the structure would only be visible from cross streets and would not be much taller than the existing buildings in the area.

Leaving Manteca, the line would run parallel to both the UPRR railway and SR 99. Many roadways are already grade-separated from both the highway and UPRR. The introduction of the HST railway would have no visual impact because there already are the twin lineal elements of the highway and railway. This condition exists for most of the UPRR N/S alignment alternative between Manteca and Fresno. The deviation occurs where the highway leaves the railway to bypass the downtown districts of the valley cities. A typical view of the UPRR alongside SR 99 is shown in Figure 3.9-25.

In Modesto, SR 99 bypasses the downtown area. The UPRR N/S alignment alternative would remain at grade with the UPRR through Modesto, with crossing streets grade separated or closed. The Modesto station location option would be at grade, with sidings to serve the station platforms. The platforms would be accessed by an underground walkway, keeping the station profile low, resulting in no visual impact. South of the station location option, the alignment alternative would cross the Tuolumne River. There are two possible segments, eastern and western, through Modesto. The eastern segment crosses slightly upstream of the existing UPRR crossing. The western segment crosses slightly downstream through residential and industrial landscapes. The eastern segment is mainly in an industrial landscape. Either would require the removal of existing buildings, resulting in a low visual impact because the area is dominated by the existing railway and freeway.

The UPRR N/S alignment alternative rejoins SR 99 as it heads to Turlock. The alignment leaves the freeway to pass through Turlock. An elevated structure would take the HST through downtown Turlock, with a low visual impact on the existing community.

A potential at-grade station location option in Merced is planned at the location of the now vacant Southern Pacific depot. To accommodate both conventional rail and HST, the station and platforms would need to be expanded. This would require the acquisition of adjacent property for both the station facilities and the expanded trackway serving the station. The station would consist of two tracks and a single platform for conventional rail and four tracks and two platforms for HST, all connected by an elevated pedestrian crossing. Because the station is at grade, the visual impact would be low.

South of Merced, the line would continue alongside the UPRR and SR 99. An optional alignment alternative would curve to the east along McHenry Road to connect to the BNSF alignment alternative. New grade separations would be required to cross the railways and freeway in this area because SR 99 is an expressway in this area, with at grade intersections.

At the Chowchilla River, a possible connection to the Henry Miller (UPRR Connection) alignment alternative curves off to the west. Through the town of Chowchilla, the HST would ascend to an elevated structure. This would have a low visual impact on the surrounding landscape.

South of Chowchilla, a possible connection from the Henry Miller (UPRR Connection) alignment alternative would join the UPRR N/S alignment alternative. The alignment alternative would remain at grade alongside SR 99 and the UPRR all the way to Fresno.

Figure 3.9-25
UPRR along SR 99

The BNSF-UPRR, BNSF Castle, and BNSF alignment alternatives begin east of Lodi along Furry Road in an agricultural landscape. The BNSF alignment alternative continues along the existing BNSF railway. The HST would remain at grade alongside the BNSF railway through an agricultural landscape, rising on an elevated structure to pass through Escalon, with a low visual impact. South of Escalon, the HST would deviate to the west of the BNSF railway to ease a curve north of the Stanislaus River. It would then elevate to pass through the community of Riverbank, again with a low visual impact.

On the east side of Modesto, a potential HST station location option would be constructed at grade at Briggsmore Avenue. This would have low visual impact on the surrounding rural agricultural landscape to the east of the tracks and the urban suburban landscape to the west.

The BNSF alignment alternative remains at grade through the communities of Houghston and Denair, with no visual impact. The line would remain at grade with the BNSF railway until it deviates to the west to ease a curve near the Merced River.

The rural agricultural and residential urban suburban landscape between Atwater and Merced is crossed with a number of alignment alternatives. The BNSF and UPRR-BNSF alignment alternatives would follow the existing BNSF right of way through Atwater at grade and then curve to the west as it passes North Buhach Road to join the UPRR to pass through Merced. This connection from the BNSF to the UPRR would be a new alignment, passing at angles across an established rural agricultural landscape, creating a medium visual impact. Another alignment alternative for the HST through Merced, BNSF Castle, would continue to follow the BNSF railway at grade through Merced.

The UPRR N/S alignment alternative through Merced would be at grade, with a combined HST and conventional rail station location option at the site of the former Southern Pacific station. While some properties would need to be acquired to accommodate the expanded station, the visual impact would be low because the station would be at grade.

South of Merced, the BNSF alignment alternative would leave the UPRR N/S alignment alternative and curve east along McHenry Road to rejoin the BNSF railway just north of Le Grand. This alignment alternative would have no visual impact because it crosses a primarily agricultural landscape. The alignment alternative that keeps the HST on the BNSF line through Merced would require a curve to be eased as the line passes out of Merced along SR 140. This would require the acquisition and removal of some buildings, creating a low visual impact.

After passing the community of Le Grand, the HST alignment alternative would deviate from the BNSF alignment to the west to ease a curve north of the Chowchilla River. After passing the river, an alignment alternative to the Henry Miller (BNSF Connection) alignment alternative would curve to the west. The alignment alternative would end near Berenda Creek, where it would be met by the Henry Miller (UPRR Connection) alignment alternative.

Historic Buildings, Neighborhoods, Landscapes

There are few historic sites along the corridor. The UPRR alignment passes through the center of most of the towns and cities between Stockton and Fresno, many of which still exhibit the traditional small urban landscape of valley towns. Additionally, many of the railway stations along the corridor are historic in nature or replicas of original stations. Most of the HST would be at grade, adjacent to an existing railway, so the visual impacts would be low.

Affected Views from State Scenic Highways

There are no state scenic highways, designated or eligible, in the Central Valley corridor.

Short-Term Construction Impacts

Construction of the HST system would have short-term impacts on visual resources that vary with the type of alignment (at-grade, elevated, tunnel, etc.) selected. The construction process is similar to that of roadway construction. The following descriptions are not meant to exhaustively detail the HST construction process but rather discuss the major components of construction and their impact on the visual quality of the surrounding landscape during construction.

For all construction, the alignment is surveyed. For areas of cut and fill construction, the alignment is fenced, and heavy equipment excavates/fills soil to the grade of the future rail line while the drainage, swales, and culverts are constructed. The earthworks are compacted and allowed to settle in areas of fill. Slopes are seeded to prevent erosion. The visual impact of this type of construction is greatest when excavation/fill activities take place; the fresh soil contrasts with the surrounding landscape. The level of overall activity from the construction equipment is greater than rail operations. Activity during construction is not limited to the trackway area; it is spread across the entire right-of-way. As the cut and fill earthworks are completed, the area would be planted with appropriate native flora. As time passes, it is assumed that the landscape outside the immediate HST trackway would revegetate to visually blend with the surrounding landscape.

At-grade construction would commence where there is already a level path for the HST or along areas where the path for the HST was created through cuts and fills, as described above. If building on level ground, the existing topsoil and any vegetation is removed. Utilities are relocated and drainage is constructed. Soil is brought to the site, deposited along the line, and carefully compacted. The trackway is built by depositing layers of crushed stone (sub ballast) covered by a geo-textile fleece, which is covered with gravel and topped with a layer of asphalt. This portion of the construction is very similar to highway construction, with similar construction methods.

There are two potential types of rail systems that can be used for HSTs. One is the familiar concrete crosstie to hold the rails, the other is embedded slab track, a continuous concrete base to which the rails are attached. Each is constructed using a highly mechanized system.

Additional trackway construction includes the installation of cable ducts, catenary pole foundations and the poles atop them, installation of the catenary wires and fencing, soundwalls, and crash barriers where the HST runs in a constrained right-of-way near other rail systems or highways. The final step would be to plant the areas outside the trackway with appropriate native plants and grasses, or ornamental landscaping in urbanized areas.

The HST trackway must be separated from roadway crossings, highways, and freight railway lines. Grade separations, overpasses and underpasses, and short sections of tunnel would need to be constructed. The short-term visual impacts from these activities would include increased truck traffic on local streets and the presence of construction machinery in the immediate area of the separations. Temporary detours of streets and adjacent rail lines (rail detours are known as shooflies) have the potential for high visual impacts, especially if the existing rail line must be placed on a shoofly that runs outside a constrained right-of-way.

In areas where the HST would be on an elevated alignment, the construction requires placing piles and excavating foundations for the support columns, erecting formwork for the columns that would support the structure, delivering concrete to the site by truck, and constructing the elevated spans, either by lifting prefabricated concrete or steel spans into place with cranes, or building falsework to cast concrete spans in place. Either method requires large construction machinery, which would be a high visual impact in most locations during the span of construction. Once the elevated structure is complete, the trackway would be constructed upon it.

Retained fill sections would require the removal of the existing topsoil and vegetation in the immediate construction area. Additional excavation below the existing grade could be necessary in areas with poor soil conditions. This initial phase of construction would resemble the at-grade construction. To support the retaining walls, pile-supported concrete foundation beams would be built along the line of the wall. Pre-cast interlocking panels would be placed atop the beam, and soil would be deposited behind the walls and compacted. This would require constant operation of compacting vehicles. As the walls rise, so would the soil behind them. Truck traffic would be increased in the project area as the soil and other materials are brought to the site. The visual impact of the truck traffic would vary, from low to high, depending on the general traffic conditions in the area. In areas of low traffic, the short-term construction traffic would be a medium visual impact. In busier areas, the construction traffic would blend in with the existing traffic, with a low visual impact.

Once the retained fill and walls reach the final height, the remaining construction activities associated with trackway construction would take place atop the completed retained fill section. A final activity would be to landscape the area on and at the base of the walls.

Construction of retained cut sections would begin with the removal of vegetation in the project area and the erection of safety fencing around the project perimeter. Underground utilities in the area would be relocated. Steel sheet piles would be driven down each side of the excavation area to shore up the adjacent soils. This would be done with tall pile-driving machinery, and would be a high visual impact during the construction period. Detours would take roadways around the construction of permanent bridges to carry traffic over the completed cut section. Heavy machinery would excavate the area and trucks would haul the excavated soil away from the site. As the cut deepens, the activity would fall from the view of adjacent properties, but the truck traffic leaving the site would create a visual impact, especially in areas where truck traffic is normally low. As the cut is completed, the walls would be finished in concrete and the trackway at the bottom of the cut would be finished as discussed above. Final steps would be to return the detoured roadways to the new overcrossings, build permanent fencing along the cut, and establish landscaping where appropriate. As noted previously, the level of visual impact from the construction traffic would vary with the level of other traffic in the project area.

Cut and cover tunnels would be constructed much like the open cut described above, but the entire cut would be bridged over when complete. Soil would be deposited atop the roof of the cut and streets would be rebuilt at grade. To minimize costs, it is desirable to store the excavated soil that would be re-used on site somewhere near the site. Depending on conditions that would affect the volume of soil to be stored, this temporary stockpile could create a medium to high visual impact, the level of which would depend on the adjacent uses and the amount of material stored. When the tunnel was backfilled with soil, the remaining surfaces would be landscaped.

As is the case with long-term visual impacts, the short-term visual impacts of bored tunnel construction would be constrained to the tunnel portals and any possible vent shafts. Depending on tunnel length, the short term visual impacts can be high. Support facilities for tunneling include concrete plants, soil transfer stations (to take soil excavated from the tunnel and load it onto vehicles to take it off-site for disposal), and construction offices. Tunnel vent shaft locations are less intrusive, yet the short term visual impact from construction is far greater than the long term. Once the tunnel is complete, the area at the portal can be returned to its previous state, eliminating the visual impacts from the construction period.

For all above-grade construction activities and cut and cover tunnels, staging areas with construction materials, signage, and night lighting would be visible from adjacent properties and roadways during the construction period. For tunneled sections, the construction activity would be limited to portal and potential vent shaft locations. Additional systemwide construction activity includes a central

location for rail and ballast deliveries. These impacts can vary from low to high, depending on the surrounding land uses. Sites in industrial landscapes would experience a low visual impact from staging areas. Rural locations would most likely experience high visual impacts from staging activities.

3.9.4 Photo Simulations of Alternatives in Selected Scenic Areas

The photo simulations referenced above illustrate what the HST Alignment Alternatives or station location options may look like in typical landscapes, using existing conditions as the baseline. These simulations do not include potential changes to the existing landscapes that could occur between the time of this analysis and the year 2020 from other projects and urban development. These simulations are meant to illustrate how the existing dominant landscape features would be potentially changed with the implementation of the proposed alternatives.

3.9.5 Design Practices

It would be speculative to address specific aesthetic treatments at the conceptual level of design of this program-level study. However, the Authority is committed to working with local agencies and communities during subsequent project-level environmental review to develop systemwide design elements that draw from the best practices worldwide and work at the project-level of design and analysis to develop context-sensitive aesthetic designs and treatments for HST infrastructure (overcrossings, bridges, tunnel portals, soundwalls, walls and fencing, stations, support facilities, etc.).

Specific, systemwide elements include fencing, noise barriers, power substations, catenary system, rails, and roadbed. The visual impact of the railway as it passes through the landscape is discussed previously in this document. The systemwide elements that are present along the railway contribute to the overall visual impact, but they are secondary to the visual impact of the railway's alignment at most times.

The rails and roadbed are placed at grade or on the structure that makes up the trackway. Because the rails and roadbed are low in profile, their visual impact is almost none. The catenary system, which consists of the poles, cables, and wires that provide the electrical power to the railway, extends for up to 25 ft (8 m) above the trackway. The dominant component of the catenary is the poles that support the cables. The composition of the poles would determine their overall visual impact. Both steel and concrete poles are common. The steel poles can be solid or a steel lattice. They may be galvanized or painted. Concrete poles are typically round and a gray concrete color. Their primary visual impact is low, much like the powerpoles along a highway.

The entire HST would be fenced. The typical fence would be an 8 ft (2.5 m) chain-link fence. The fence would run along the edge of the right-of-way, which would usually place it 2 to 3 ft (0.7 to 1 m) below the level of the tracks. From a distance, the visual impact of the fence would be less than the catenary. Where the railway would run through populated areas, enhanced fencing may be used, including vinyl-coated chain-link fencing or decorative iron fencing. Specific decisions regarding fencing types would be made later in the design process.

Sound barriers would be built along the railway where the noise of the railway needs to be mitigated, due to the land uses along the line. Typical sound barriers are built from masonry or pre-cast concrete and are approximately 8 ft to 12 ft (2.5 to 3.8 m) tall, although other materials and heights are used, including low walls designed to conceal wheel noise and barriers made of prefabricated metal or wooden panels. Typically, the walls run close to the trackway, not at the edge of the right-of-way. The sound barriers would mask most of the HST from outside the right-of-way, becoming the dominant visual feature of the railway from a close vantage point. As with highway soundwalls, landscaping, or berming, the walls can reduce their visual impact.

Electrical substations to distribute power from the commercial power grid to the railway would be necessary about every 15 to 30 mi (24 to 48 km). The substations would be approximately 15,000 sq ft (1,560 m^2). The installation would be surrounded by fencing or noise barriers, depending on location, and would have the same visual impacts as the line fencing/sound barriers noted above.

3.9.6 CEQA Significance Conclusions and Mitigation Strategies

Based on the analysis above and summarized in Table 3.9.1, each of the alignment alternatives would have potentially significant impacts on aesthetics from the introduction of the HST system into the visual landscape in the study area. The station location options that would, at a programmatic level, present potentially significant impacts on aesthetics include Pleasanton (I-680/Bernal Road), Pleasanton (BART), Livermore (I-580), Livermore (I-580 Greenville Road), Tracy (Downtown), Tracy (ACE), Union City (Shinn), and San Jose (Diridon). The HST Alignment Alternatives and station location options would also create construction-related short-term visual changes that are not considered significant at the programmatic level.

Mitigation strategies, as well as the design practices discussed in Section 3.9.5, can be refined and applied at the project level to reduce these impacts. Refinement of mitigation strategies would take place in consultation with the appropriate local and regional agencies and with the public. Mitigation measures would be implemented as feasible. These strategies include:

- At the project level, design proposed facilities that are attractive in their own right and that would integrate well into landscape contexts so as to reduce potential view blockage, contrast with existing landscape settings, light and shadow effects, and other potential visual impacts.
- Design bridges and elevated guideways with graceful lines and minimal apparent bulk and shading effects.
- Design elevated guideways, stations, and parking structures with sensitivity to the context, using exterior materials, colors, textures, and design details that are compatible with patterns in the surrounding natural and built environment and that minimize the contrast of the structures with their surroundings.
- Use neutral colors and dulled finishes that minimize reflectivity for catenary support structures, and design them to fit the context of the specific locale.
- Use aesthetically appropriate fencing along rights-of-way, including decorative fencing, where appropriate, and use dark and non-reflective colors for fencing to reduce visual contrast.
- Where at-grade or depressed route segments pass through or along the edge of residential areas or heavily traveled roadways, install landscape treatments along the edge of the right-of-way to provide partial screening and to visually integrate the right-of-way into the residential context.
- Use the minimum amount of night lighting consistent with that necessary for operations and safety.
- Use shielded and hooded outdoor lighting directed to the area where the lighting is required, and use sensors and timers for lights not required to be on all of the time.
- Design stations to minimize potential shadow impacts on adjacent pedestrian areas, parks, and residential areas, and site all structures in a way that minimizes shadow effects on sensitive portions of the surrounding area.
- Seed and plant areas outside the operating rail trackbed that are disturbed by cut, fill, or grading to blend with surrounding vegetated areas where the land will support plants. Use native vegetation in appropriate locations and densities.
- Use strategic plantings of fast-growing trees to provide partial or full screening of elevated guideways where they are close to residential areas, parks, and public open spaces.

- Where elevated guideways are located down the median strips or along the edge of freeways or major roadways, use appropriate landscaping of the area under the guideway to provide a high level of visual interest. Landscaping in these areas should use attractive shrubs and groundcovers, and emphasize the use of low-growing species to minimize any additional shadow effects or blockage of views.
- Plan hours of construction operations and locate staging sites to minimize impacts to adjacent residents and businesses.
- Screen construction sites, as appropriate, to minimize visual construction impacts.

While the mitigation strategies described above would substantially lessen impacts to aesthetics and visual resources, it is uncertain at this program level that these impacts can be mitigated to a less-than-significant level for each of the alternative alignments or station location options. This is of greatest concern in areas where changes in scenic open space and mountain crossing areas are anticipated. As part of site-specific designs, many of the impacts on aesthetics and visual resources can be avoided or substantially mitigated. However, because of the size of the project and the variety of types of terrain it affects in the study area, there is insufficient evidence to make that determination at this stage of design. Therefore, for purposes of this Program EIR/EIS, this impact is considered significant and unavoidable. Additional environmental assessment would allow a more precise evaluation in the second tier project-level environmental analyses.

3.9.7 Subsequent Analysis

Specific analyses that would be appropriate for project-level environmental evaluation are discussed below.

- Detailed analyses should be performed, particularly in areas with elevated structures, to identify potential visual intrusions into residential and park and open space areas. These analyses should focus on identifying the potential for blockage of valued views; the areas where shadows would be cast on residential and open space lands; and the areas where the scale, form, line, and color of project facilities would substantially alter the existing character and quality of the setting. In addition to producing a detailed inventory of site-specific impacts, this analysis would serve as the basis for identifying areas where project siting adjustments, design modifications, landscaping, and other mitigation measures may be incorporated to reduce potentially considerable impacts to a low level.
- Review of local urban design plans and policies should be conducted to take into account local design objectives. The analyses would provide a basis for considering specific design measures that would modify the impacts of the project in ways that would make the project design more consistent with local urban design goals.
- An analysis should focus on the portions of alignment that would be located adjacent to and down the median strip of freeways.
- For each of the proposed station location options, further analyses should be conducted in consultation with local agencies to develop an understanding of the relationship of the proposed station architecture, parking lots, lighting systems, and other features to the surrounding natural and built setting and surrounding historic context. The analyses should identify the potential for blockage of valued views; the areas where shadows would be cast; and the areas where the scale, form, line, and color of project facilities could be designed to blend with the surrounding landscape. The analyses would be used to provide a basis for considering specific measures that could be integrated into the final station designs to reduce the visual impacts of the stations on their surroundings.